

Traffic Signal and ITS Standard Details



City of Glendale Transportation Department
5850 West Glendale Avenue, Glendale, Arizona 85301

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






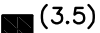

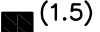





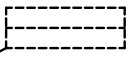
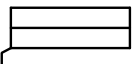












CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
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REVISION:
2/2010
T1-1

APPROVED BY

DATE

SYMBOL LEGEND

EXISTING	PROPOSED	DESCRIPTION
-		DETAIL
		VAULT
		NO. 8 PULL BOX
		NO. 9 PULL BOX
		NO. 7 PULL BOX
		NO. 7 PULL BOX WITH EXTENSION
		NO. 5 PULL BOX
		NO. 3.5 PULL BOX
		NO. 1.5 PULL BOX
		NO. 1 PULL BOX
		CONTROLLER CABINET
-----	_____	CONDUIT
-		VIDEO DETECTION ZONE
		DETECTOR LOOP, QUADRUPOLE
		CCTV CAMERA
		VIDEO DETECTION UNIT
		EMERGENCY VEHICLE PRE-EMPTION UNIT
		VEHICULAR SIGNAL HEAD WITH BACKPLATE
		PEDESTRIAN SIGNAL HEAD
		PEDESTRIAN PUSH BUTTON

LINETYPE LEGEND

-----	RIGHT-OF-WAY	-----	CTV	CABLE TELEVISION
-----	CENTERLINE	-----	OH	OVERHEAD POWER LINE
-----W-----	WATER LINE	-----	E	UNDERGROUND POWER LINE
-----G-----	GAS LINE	-----	S	SEWER LINE
-----SD-----	STORM DRAIN	-----	IRR	IRRIGATION LINE
-----COM-----	COMMUNICATION	-----	T	TELEPHONE LINE
		-----	FO	FIBER OPTIC

SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
LEGEND OF COMMONLY
USED SYMBOLS AND LINETYPES

REVISION:

2/2008

T1-2

ABBREVIATIONS

AC	ASPHALTIC CONCRETE	ML	MATCH LINE
ABC	AGGREGATE BASE COARSE	MMFO	MULTIMODE FIBER OPTIC CABLE
ACIA	ASYNCHRONOUS COMMUNICATIONS INTERFACE ADAPTER	NEC	NATIONAL ELECTRIC CODE
APS	ARIZONA PUBLIC SERVICE	NEMA	NATIONAL ELECTRICAL MANUFACTURER'S ASSOCIATION
APWA	AMERICAN PUBLIC WORKS ASSOCIATION	NIC	NOT IN CONTRACT
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	NM	NANOMETER
ATM	ASYNCHRONOUS TRANSFER MODE	NTSC	NATIONAL TELEVISIONS SYSTEMS COMMITTEE
AWG	AMERICAN WIRE GAUGE	OD	OUTER DIAMETER
BC	BOLT CIRCLE	OTDR	OPTICAL TIME DOMAIN REFLECTOMETER
C	CONDUIT	FOTR	FIBER OPTIC TRANSCEIVER
CC	CONTROL CABLE	PB	PULL BOX
CCTV	CLOSED CIRCUIT TELEVISION	PC	PERSONAL COMPUTER
CD	COMPACT DISC	PCCP	PORTLAND CEMENT CONCRETE PAVEMENT
CL	CENTER LINE	PRI	PRIMARY
COG	CITY OF GLENDALE	PVC	POLYVINYL CHLORIDE
CPC	CIRCULAR PLASTIC CONNECTOR	R	RADIUS
DB	DECIBEL	RAM	RANDOM ACCESS MEMORY
DB-25	25 PIN CONNECTOR	RGB	RED GREEN BLUE
DET	DETECTOR	RMC	RIGID METAL CONDUIT
EIA	ELECTRONICS INDUSTRY ASSOCIATION	ROW	RIGHT-OF-WAY
EOC	EMERGENCY OPERATIONS CENTER	RS-232	EIA REVISED STANDARD 232
EOP	EDGE OF PAVEMENT	RS-422	EIA REVISED STANDARD 422
EVPE	EMERGENCY VEHICLE PRE-EMPTION	RS-485	EIA REVISED STANDARD 485
EX	EXISTING	SMFO	SINGLE MODE FIBER OPTIC CABLE
FDM	FREQUENCY DIVISION MULTIPLEXER	SMFO(xx)	SINGLE MODE FIBER OPTIC CABLE (NUMBER OF FIBERS)
FP	FULL PENETRATING	SONET	SYNCHRONOUS OPTICAL NETWORK
FT	FOOT	SRP	SALT RIVER PROJECT
HD	HEAD	ST	FIBER OPTIC CONNECTOR TYPE
ID	INSIDE DIAMETER	TIA	TELECOMMUNICATIONS INDUSTRY ASSOCIATION
IISNS	INTERNALLY ILLUMINATED STREET NAME SIGN	TMC	TRAFFIC MANAGEMENT CENTER
IMSA	INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION	TS	TRAFFIC SIGNAL
KM	KILOMETER	TSC	TRAFFIC SIGNAL CONTROLLER
KVA	KILO-VOLT-AMPERES	TYP	TYPICAL
LED	LIGHT EMITTING DIODE	VAC	VOLTS ALTERNATING CURRENT
LI	LOOP LEAD-IN CABLE	VID	VIDEO DETECTION UNIT
MAG	MARICOPA ASSOCIATION OF GOVERNMENTS		

**SIGNATURES
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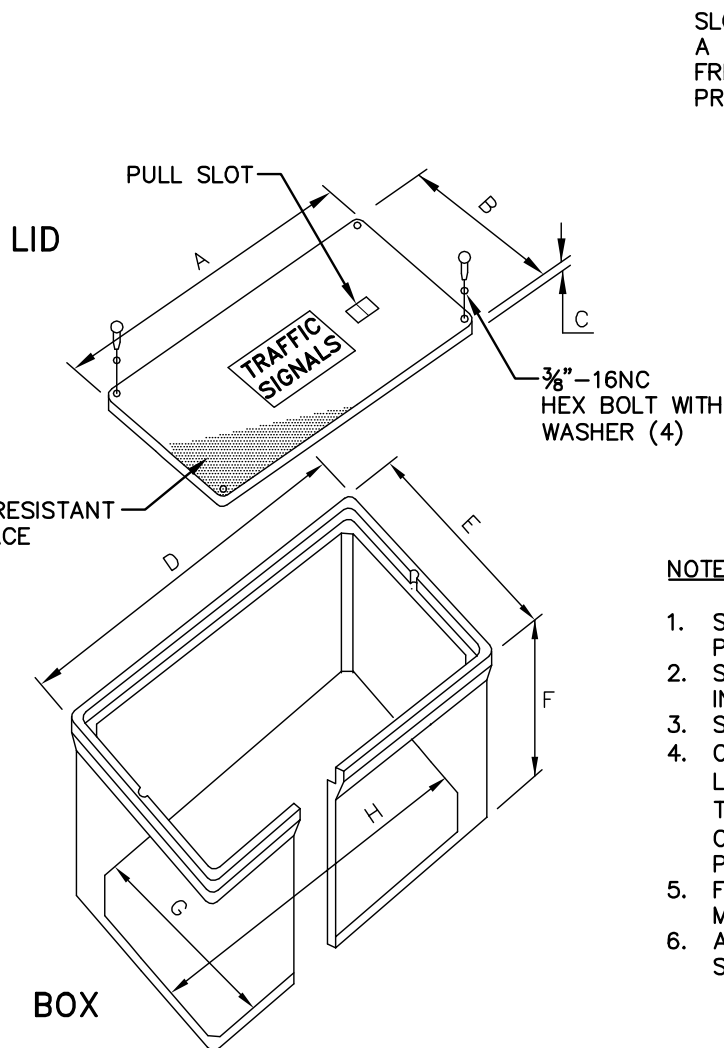
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

LEGEND OF COMMONLY
USED ABBREVIATIONS

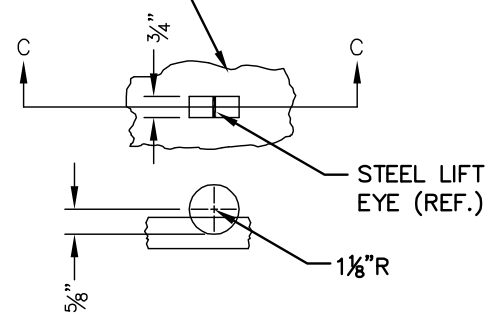
REVISION:

6/2007

T1-3



SLOT SHALL HAVE
A SMOOTH FINISH,
FREE OF CONCRETE
PROJECTIONS.



SECTION C-C
LIFT EYE SLOT DETAIL

NOTES:

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. SEE THIS SHEET FOR LIFT EYE SLOT DETAIL.
4. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
5. FOR PULL BOXES WITH EXTENSIONS, THE BOXES MAY BE STACKED.
6. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.

SPECIFICATIONS

12"X12" (NO. 1) AND 8"X18" (NO. 1.5) PC STYLE QUAZITE GASKETED BOXES

LID

DESCRIPTION	PART NO.	DIMENSIONS (IN.)			WT. LBS.
		A	B	C	
STANDARD COVER 4 BOLTS	PC1212CG00	12 $\frac{7}{8}$	12 $\frac{7}{8}$	$\frac{3}{4}$	12
	PC0818CG00	19 $\frac{5}{8}$	9 $\frac{5}{8}$	$\frac{3}{4}$	11

BOX

DESCRIPTION	PART NO.	DIMENSIONS (IN.)					WT. LBS.
		D	E	F	G	H	
BOX WITH OPEN BASE	PC1212BG12	14 $\frac{3}{4}$	14 $\frac{3}{4}$	12 $\frac{3}{4}$	12	12	27
	PC0818BG08	21 $\frac{1}{2}$	11 $\frac{1}{2}$	8	8 $\frac{1}{4}$	18 $\frac{1}{4}$	20

SIGNATURES
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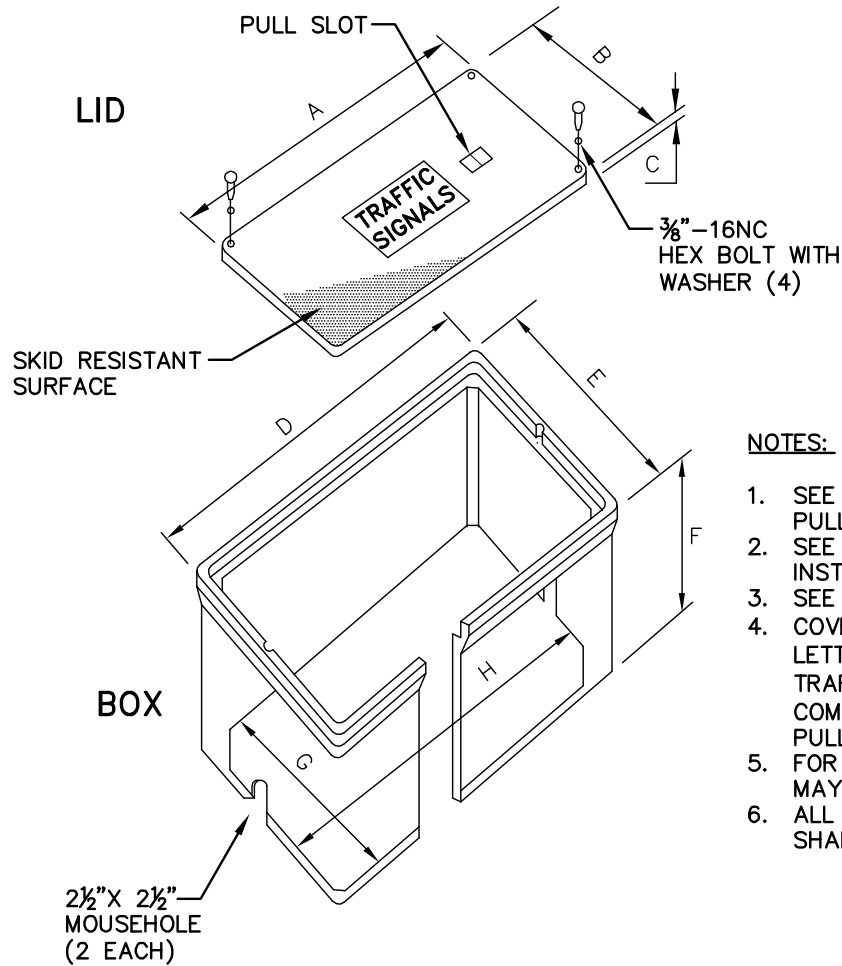


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 1 AND NO. 1.5 PULL BOXES

REVISION:
6/2007

T2-1

**NOTES:**

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. SEE STANDARD T2-1 FOR LIFT EYE SLOT DETAIL.
4. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
5. FOR PULL BOXES WITH EXTENSIONS, THE BOXES MAY BE STACKED.
6. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.

SPECIFICATIONS

11"X18" (NO. 3.5) QUAZITE ASSEMBLIES

LID

DESCRIPTION	PART NO.	DIMENSIONS (IN.)			WT. LBS.
		A	B	C	
W/2 BOLTS	PG1118CA00	18 $\frac{3}{8}$	11 $\frac{1}{4}$	1 $\frac{3}{4}$	27

BOX

DESCRIPTION	PART NO.	DIMENSIONS (IN.)					WT. LBS.
		D	E	F	G	H	
OPEN BOTTOM W/(2) MOUSEHOLES	PG1118BB12	20 $\frac{1}{4}$	13 $\frac{3}{8}$	12	10 $\frac{5}{8}$	17	35

SIGNATURES
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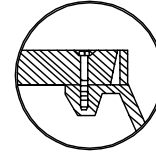
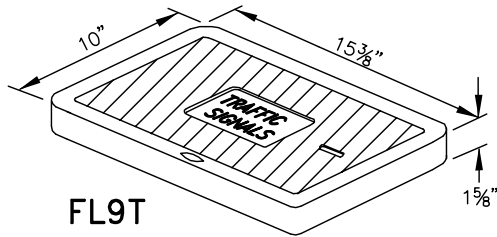


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

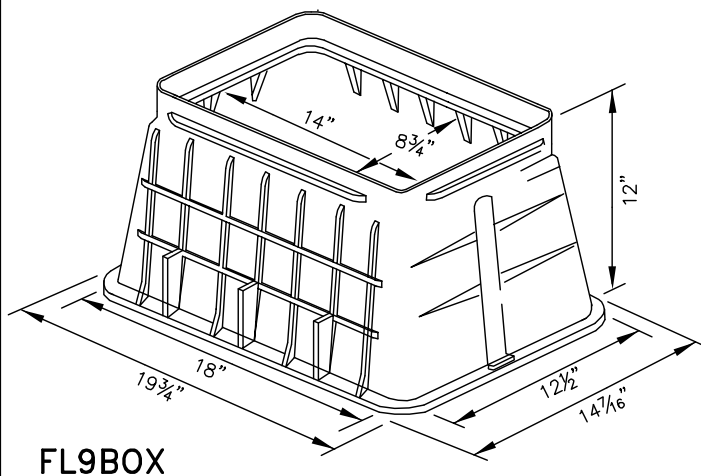
NO. 3.5 PULL BOX

REVISION:
6/2007

T2-2

"T" LIDS

STRAIGHT TYPE PENTAHEAD
BOLT FOR "T" BOX

**NOTES:**

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
4. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.

SPECIFICATIONS

FIBRELYTE FL9 BOX 10"X17" (NO. 3.5)

SPECIFICATIONS OF ACCEPTABLE FIBRELYTE PRODUCTS

CHRISTY ORDERING CODE	ITEM	DESCRIPTION
FL9BOX	BOX	9FL BOX (10"X17" I.D. X 12" HIGH)
FL9T	LID	9FL FIBRELYTE LID, BOLT DOWN

**SIGNATURES
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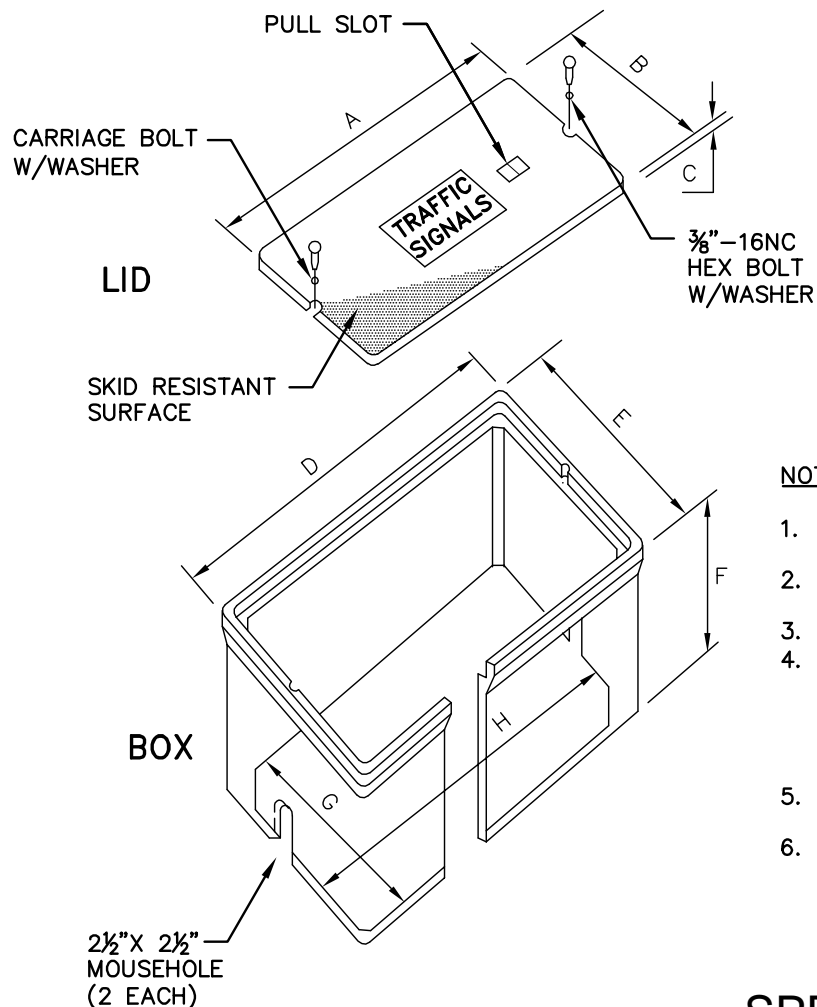


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 3.5 FIBRELYTE PULL BOX

REVISION:
6/2007

T2-3

**NOTES:**

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. SEE STANDARD T2-1 FOR LIFT EYE SLOT DETAIL.
4. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
5. FOR PULL BOXES WITH EXTENSIONS, THE BOXES MAY BE STACKED.
6. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.

SPECIFICATIONS

13"X24" (NO. 5) QUAZITE ASSEMBLIES

LID

DESCRIPTION	PART NO.	DIMENSIONS (IN.)			WT. LBS.
		A	B	C	
W/2 BOLTS	PG1324CA00	23 $\frac{3}{4}$	13 $\frac{3}{4}$	2	32

BOX

DESCRIPTION	PART NO.	DIMENSIONS (IN.)					WT. LBS.
		D	E	F	G	H	
OPEN BOTTOM W/(2) MOUSEHOLES	PG1324BB12	25	15 $\frac{1}{2}$	12	11 $\frac{3}{4}$	21 $\frac{1}{4}$	53

**SIGNATURES
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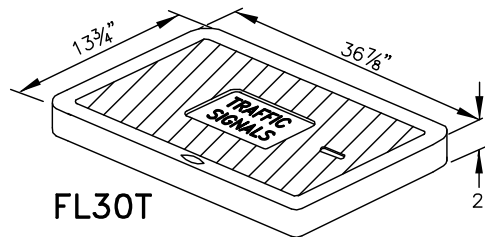
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TRAFFIC SIGNAL AND ITS STANDARDS

NO. 5 PULL BOX

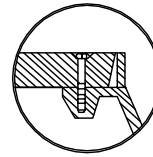
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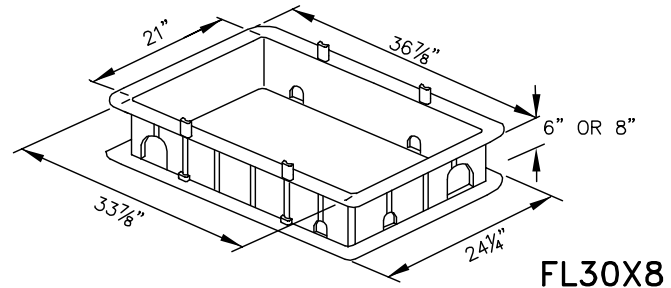
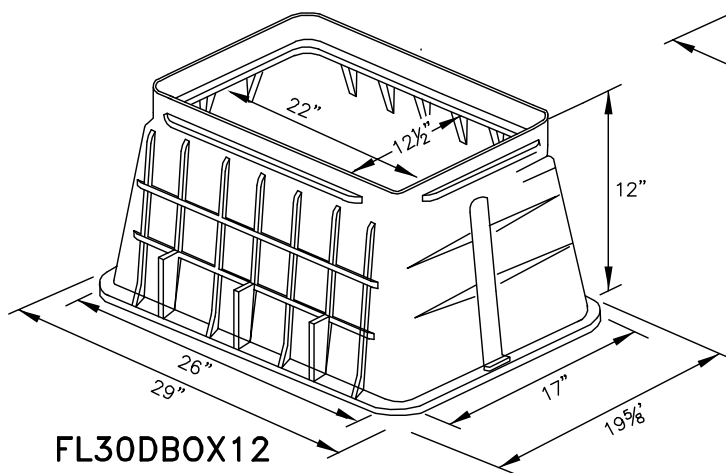
T2-4



"T" LIDS



STRAIGHT TYPE PENTAHEAD
BOLT FOR "T" BOX



NOTES:

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
4. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.

SPECIFICATIONS FIBRELYTE FL30 BOX 13"X24" (NO. 5)

SPECIFICATIONS OF ACCEPTABLE FIBRELYTE PRODUCTS

CHRISTY ORDERING CODE	ITEM	DESCRIPTION
FL30BOX12	BOX	30FL BOX (13"X24" I.D. X 12" HIGH)
FL30T	LID	30FLT FIBRELYTE LID, BOLT DOWN
FL30X8	EXTENSION	30FL 8" HIGH EXTENSION

**SIGNATURES
ON FILE**

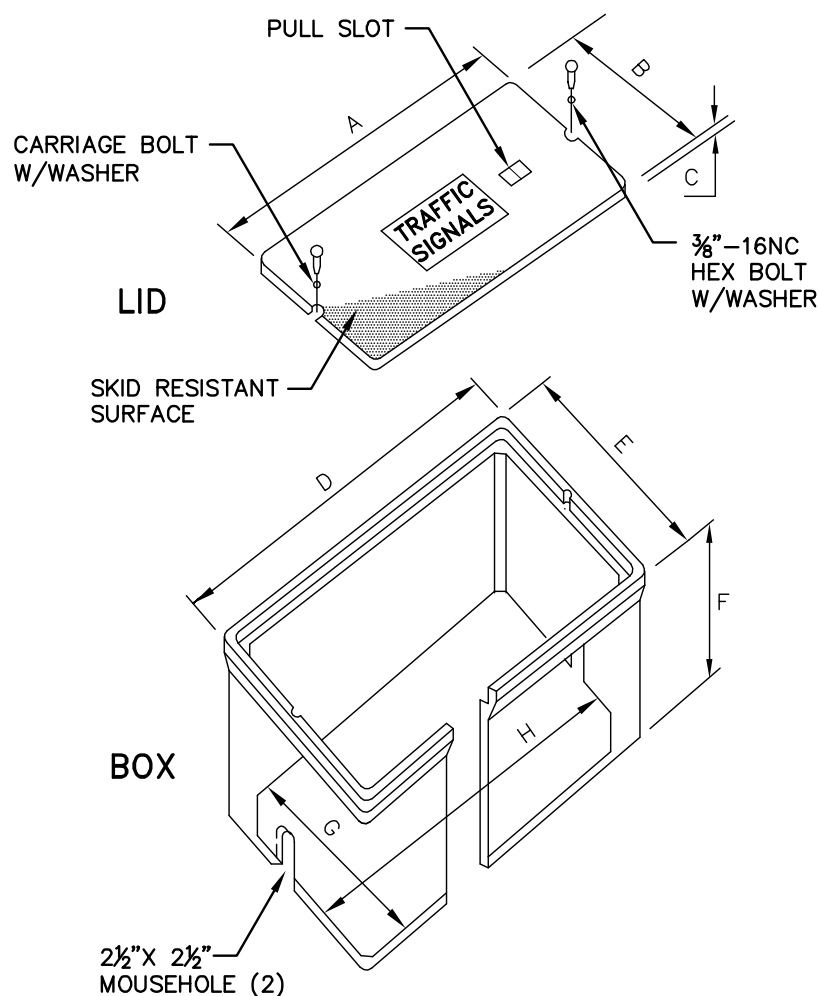


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 5 FIBRELYTE PULL BOX

REVISION:
6/2007

T2-5

**NOTES:**

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. SEE STANDARD T2-1 FOR LIFT EYE SLOT DETAIL.
4. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
5. FOR PULL BOXES WITH EXTENSIONS, THE BOXES MAY BE STACKED.
6. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.

SPECIFICATIONS

17"X30" (NO. 7) QUAZITE ASSEMBLIES

LID

DESCRIPTION	PART NO.	DIMENSIONS (IN.)			WT. LBS.
		A	B	C	
W/2 BOLTS	PG1730CA00	30½	17½	2	52

BOX

DESCRIPTION	PART NO.	DIMENSIONS (IN.)					WT. LBS.
		D	E	F	G	H	
OPEN BOTTOM W/(2) MOUSEHOLES	PG1730BB12	32¼	19¼	12	15½	28½	65

**SIGNATURES
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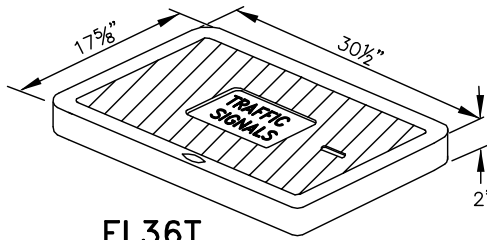
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 7 PULL BOX

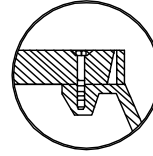
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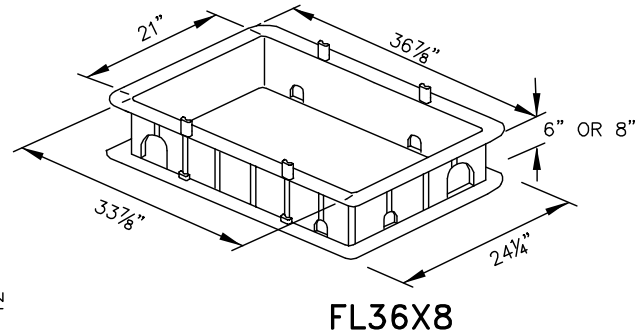
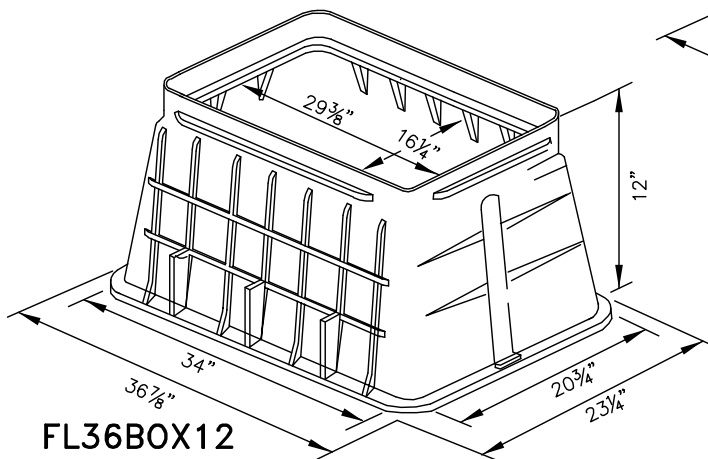
T2-6



"T" LIDS



STRAIGHT TYPE PENTAHEAD
BOLT FOR "T" BOX



NOTES:

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
4. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.

SPECIFICATIONS FIBRELYTE FL36 BOX 17"X30" (NO. 7)

SPECIFICATIONS OF ACCEPTABLE FIBRELYTE PRODUCTS

CHRISTY ORDERING CODE	ITEM	DESCRIPTION
FL36BOX12	BOX	36FL BOX (17"X30" I.D. X 12" HIGH)
FL36T	LID	HIGH 36FLT FIBRELYTE LID, BOLT DOWN
FL36X8	EXTENSION	36FL 8" HIGH EXTENSION

SIGNATURES
ON FILE

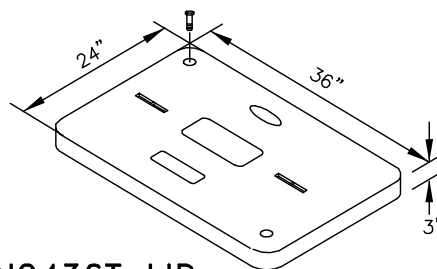


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

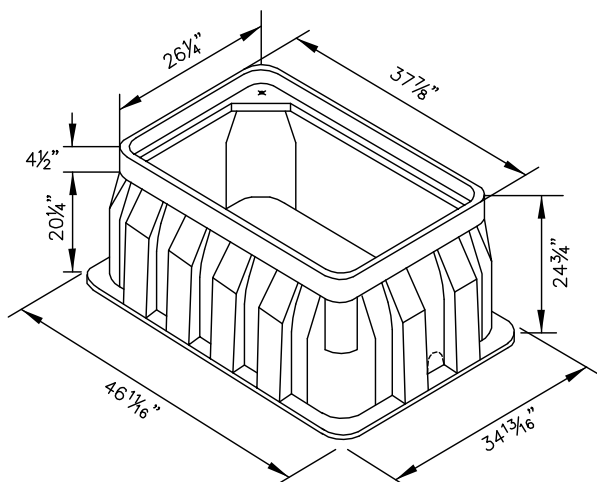
NO. 7 FIBRELYTE PULL BOX

REVISION:
6/2007

T2-7



SYN2436T LID



SYN2436T BOX

NOTES:

1. SEE CITY OF GLENDALE SPECIFICATIONS FOR PULL BOX MATERIAL REQUIREMENTS.
2. SEE STANDARD T2-10 FOR TYPICAL PULL BOX INSTALLATION DETAILS.
3. SEE STANDARD T2-1 FOR LIFT EYE SLOT DETAIL.
4. COVER LETTERING SHALL BE 1" LETTERS. LETTERING SHALL READ "TRAFFIC SIGNALS" FOR TRAFFIC SIGNAL BOXES OR "COG COMMUNICATIONS" FOR ITS/INTERTIE/FIBEROPTIC PULL BOXES.
5. ALL HARDWARE REQUIRED TO SECURE THE LID SHALL BE SUPPLIED BY THE CONTRACTOR.
6. ALL DIMENSIONS SHOWN ARE APPROXIMATE
7. THIS IS NOT A TRAFFIC RATED BOX.

SPECIFICATIONS 24"X36" (NO. 8) PULL BOX

SPECIFICATIONS OF ACCEPTABLE SYNERTECH PRODUCTS

CHRISTY ORDERING CODE	ITEM	DESCRIPTION
SYN2436TBOX18	BOX	SYN2436 BOX (24"X36"X18" HIGH) – 12 PER PALLET
SYN2436TBOX24	BOX	SYN2436 BOX (24"X36"X24" HIGH) – 10 PER PALLET
SYN2436TBOX36	BOX	SYN2436 BOX (24"X36"X36" HIGH) – 8 PER PALLET
SYN2436T	LID	SYNERTECH LID, BOLT DOWN

**SIGNATURES
ON FILE**



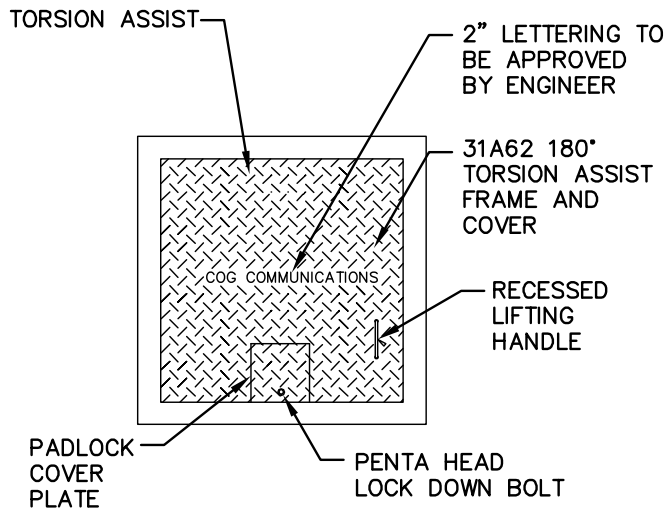
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 8 PULL BOX

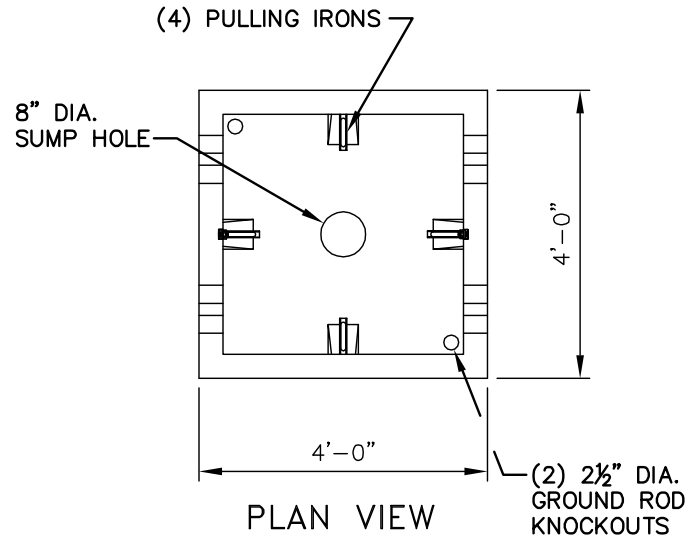
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6/2007

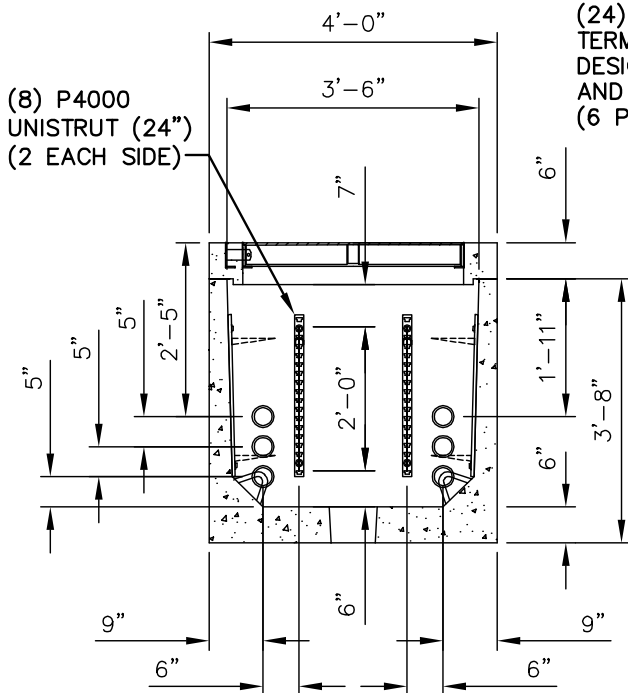
T2-8



PLAN VIEW WITH COVER

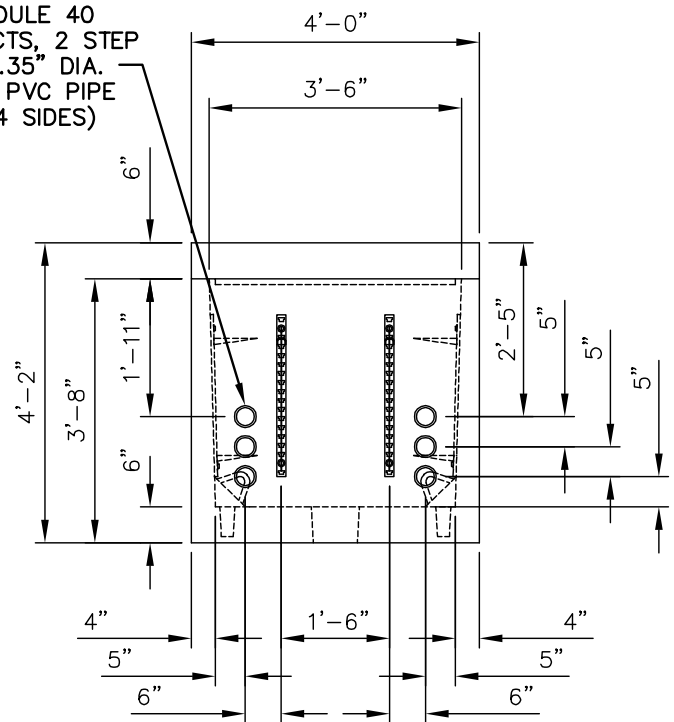


PLAN VIEW



SECTION VIEW

(24) 4" SCHEDULE 40
TERM- A-DUCTS, 2 STEP
DESIGN FOR 4.35" DIA.
AND 4½" DIA. PVC PIPE
(6 PER SIDE/4 SIDES)



END VIEW

NOTE:

SEE SHEET 2 FOR GENERAL NOTES, STRUCTURAL
NOTES AND RACKING PACKAGE DETAIL.

**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 9 PULL BOX

REVISION:
2/2008

T2-9
1 OF 2

RACKING PACKAGE DETAIL



8 - 18 HOLE RACK



16 - 1/2" SPRING NUTS AND BOLT



16 - 7 1/2" STRAIGHT HOOKS

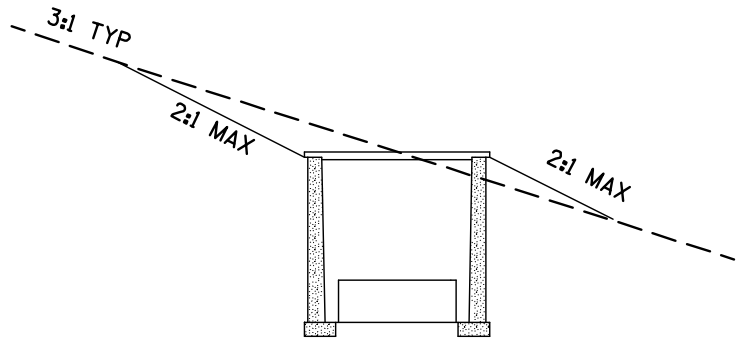
PLAN SYMBOL



EXISTING



NEW



INSTALLATION IN SLOPED AREAS

GENERAL NOTES:

- BACKFILL WITH DESIGNATED SIZE NO. 57 AGGREGATE BELOW PULL BOX. BACKFILL AROUND SIDES OF PULL BOX WITH SELECT EXCAVATED MATERIAL AND THOROUGHLY COMPACT.
- CONDUIT FROM THE TYPICAL TRENCH SECTION SHALL NOT DEFLECT BY MORE THAN 1"/12" FROM THE ALIGNMENT PRECEDING OR FOLLOWING THE PULL BOX.
- TOP OF CONDUITS SHALL BE LOCATED AT 25" BELOW EXISTING GROUND. CONDUITS AT PULL BOXES SHALL DEFLECT NO MORE THAN 1"/12" TO ENTER PULL BOX. CONDUITS SHALL BE FLUSH WITH INSIDE OF PULL BOX.
- LONGITUDINAL AND LATERAL CONDUITS ENTER AND EXIT SAME WALL. LATERAL CONDUITS AS REQUIRED.
- ALL NEW PULL BOXES SHALL BE FURNISHED WITH RACKS AND HOOKS INSTALLED.
- PLUG EACH UNUSED CONDUIT END WITH APPROVED, WATERPROOF DUCT PLUG.
- "COG COMMUNICATIONS" SHALL BE THE TITLE EMBOSSED ON THE LID.
- PULL BOX HEIGHT SHALL BE FINISHED GRADE TO MATCH EXISTING GRADE/SLOPE.
- LID SHALL OPEN 180 DEGREES WITH A TORSION BAR LIFT ASSIST.
- LID SHALL BE DIAMOND PLATE AND HAVE GALVANIZED FINISH.
- BOX SHALL BE ORIENTED SO THAT LID OPENS AWAY FROM ANY ROADWAY LANE.
- COVER HARDWARE SHALL BE CADMIUM PLATED.
- RECESSED PADLOCK MAYBE LOCATED ON EITHER SIDE OR ON THE OPENING SIDE OF THE COVER.
- PULLING IRONS SHALL BE LOCATED AS SHOWN IN PLAN VIEW, NO DEVIATIONS ACCEPTED.
- PULLING IRONS SHALL BE 3/4" O COLD ROLLED GALVANIZED STEEL.
- WEIGHT COVER = 1075#, VAULT 3250# - 4250#, TOTAL 4325# - 5325#.
- GROUT OR SEAL SHALL BE USED AROUND CONDUITS PENETRATING THE PULL BOX.
- ALL JOINTS SHALL BE SEALED USING CONSEAL CS-101 BUTYL RUBBER ROPE.

STRUCTURAL NOTES:

- CONCRETE: 28 DAY COMPRESSIVE STRENGTH f'_c = 4500 PSI
- REBAR ASTM A-615 GRADE 60
- MESH: ASTM A-185 GRADE 65
- DESIGN: ACI-318-99 BUILDING CODE AND ASTM C-857 "MINIMUM STRUCTURAL DESIGN LOADING FOR UNDERGROUND PRECAST CONCRETE LOADING STRUCTURES"
- LOADS: HS20 WHEEL LOADING IN OFF-STREET LOCATIONS WHERE NOTE SUBJECTED TO HIGH DENSITY TRAFFIC
 80 PSF LATERAL LIVE LOAD SURCHARGE - UP TO 8'-0" DEPTH
 SOIL: 40 PCF LATERAL SOIL PRESSURE ABOVE WATER TABLE
 80 PCF LATERAL SOIL PRESSURE BELOW WATER TABLE
 120 PCF SOIL DENSITY
- SOIL COVER: 0' TO 5' (MAX.)
- WATER TABLE: 5'-0" BELOW GRADE

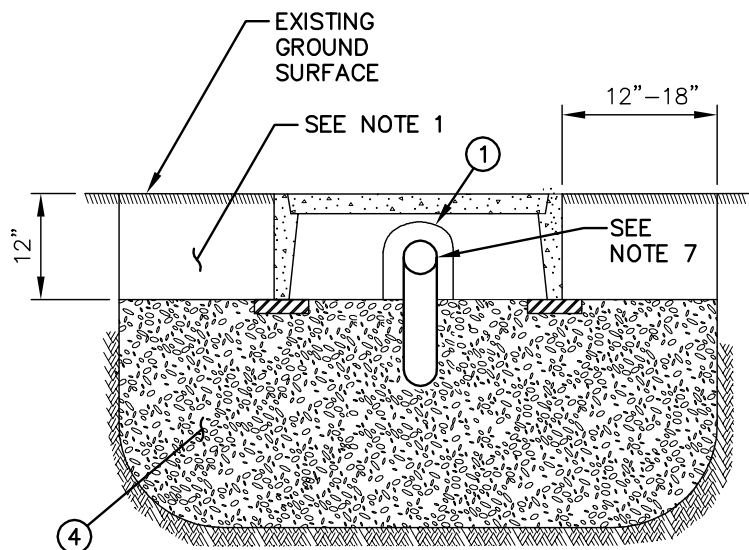
SIGNATURES
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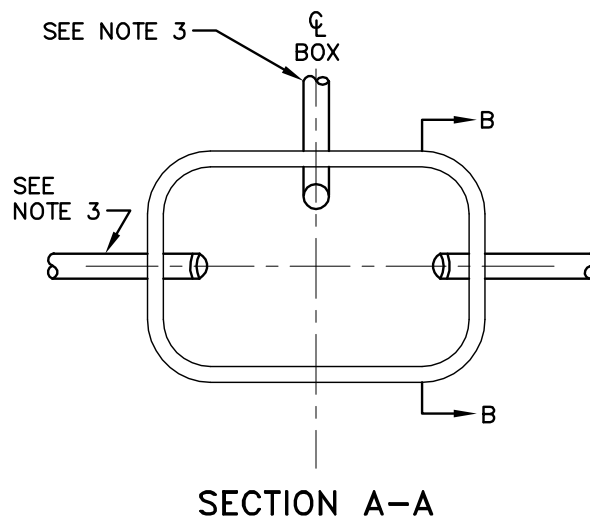
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 9 PULL BOX

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2/2008
T2-9
2 OF 2

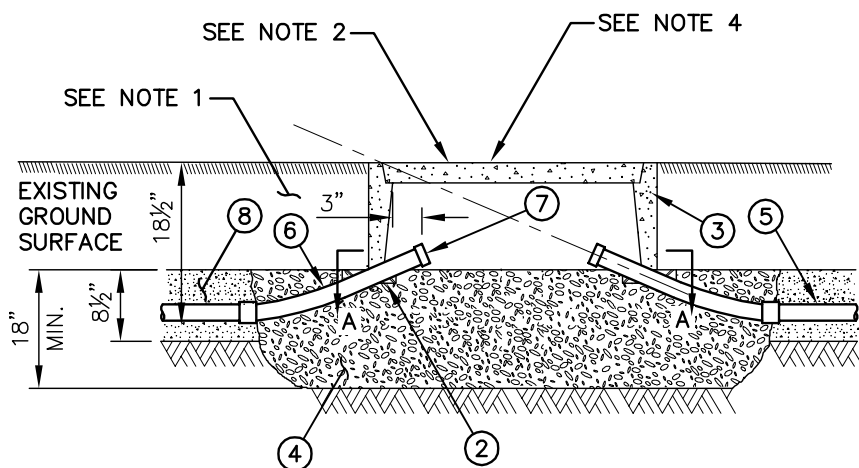


SECTION B-B



NOTES:

1. BACKFILL WITH DESIGNATED SIZE NO. 57 AGGREGATE TO 24" BELOW FINISHED GRADE. BACKFILL 24" WITH SELECT EXCAVATED MATERIAL AND THOROUGHLY COMPACT.
2. THIS BOX IS DESIGNED FOR NON-TRAFFIC AREAS.
3. CONDUITS PER PLANS.
4. CONDUIT C/L SHALL BE ALIGNED TO TOP EDGE OF PULL BOX TO FACILITATE CABLE PULLING.
5. NUMBERS IN CIRCLES REFER TO ITEMS IN MATERIALS LIST.
6. "TRAFFIC SIGNAL" SHALL BE THE TITLE INSCRIBED IN THE LID.
7. USE FELT PAPER TO BLOCK OPENING AROUND CONDUITS.
8. THIS BOX SHALL NOT BE USED FOR ITS PROJECTS UNLESS AN EXTENSION IS INCLUDED. SEE T2-10 (SHEET 2 OF 2)



NO. 7 PULL BOX

MATERIAL LIST	
ITEM	DESCRIPTION
1	KNOCK-OUT FOR CONDUIT
2	CONCRETE BUILDING BLOCK 2" X 4" X 8"
3	NO. 7 PULL BOX
4	NO. 57 AGGREGATE MATERIAL
5	SCHEDULE 40 PVC OR HDPE CONDUIT, PER PLANS
6	30 DEGREE ELBOW, 36" RADIUS (USED WITH PVC ONLY)
7	BELL END (USED WITH PVC ONLY)
8	BACKFILL

SIGNATURES ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPICAL PULL BOX INSTALLATION
NO. 7 PULL BOXES

REVISION:

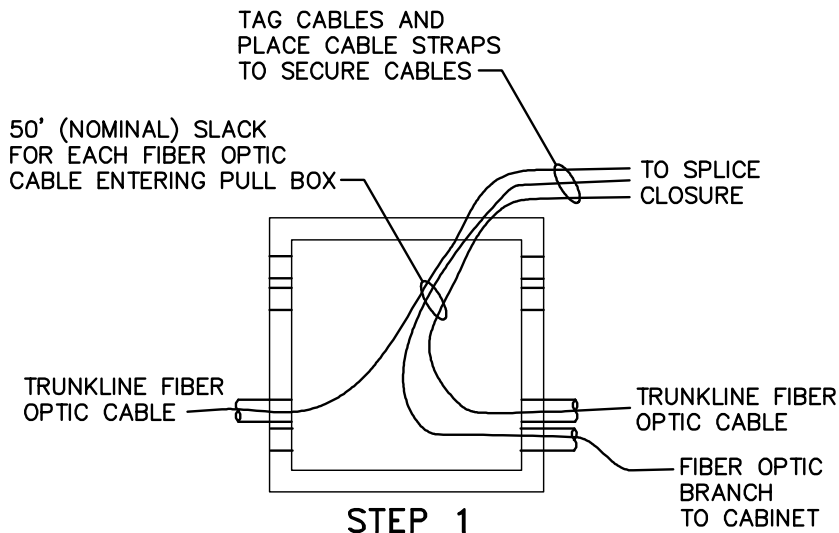
6/2007

T2-10
1 OF 2

REVISION:
6/2007

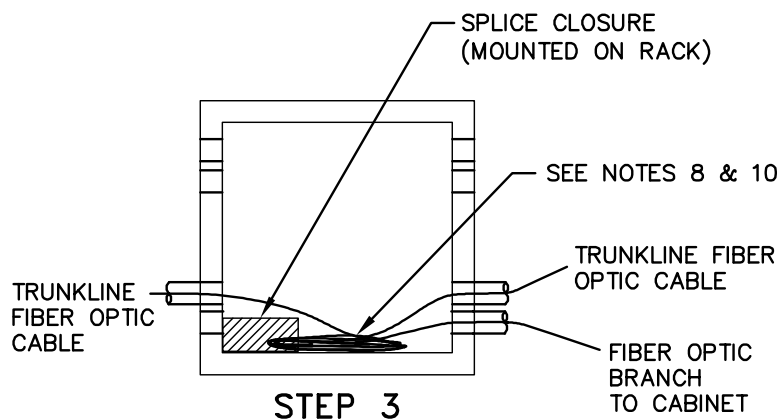
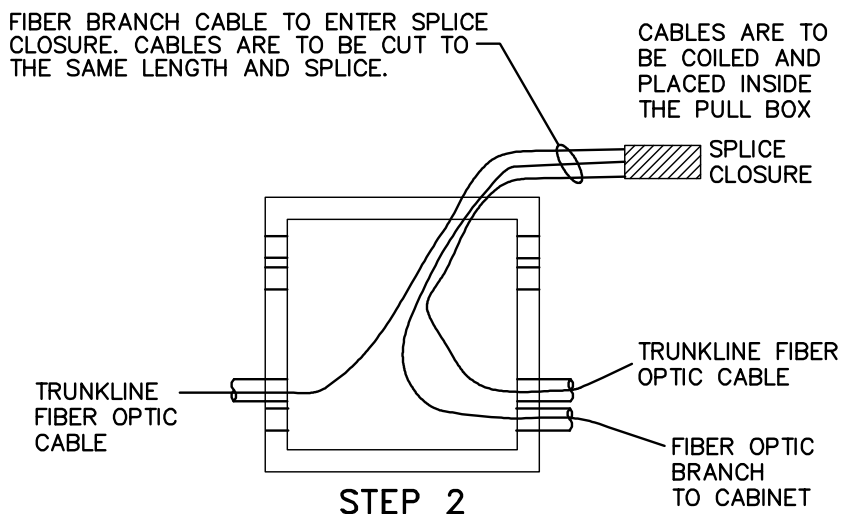
T2-10
2 OF 2

FIBER OPTIC SPLICE PROCEDURE



NOTES:

1. LOCATOR WIRES TO BE ATTACHED TO EACH OTHER.
2. PROVIDE 50 FEET OF EACH COILED FIBER OPTIC CABLE PER EACH ENTRY (100 FEET TOTAL) AND 10 FEET OF SLACK ON ANY CONDUCTORS.
3. ALL POWER AND COMMUNICATION CABLES SHALL BE TAGGED WITH CABLE IDENTIFICATION.
4. FIBER SLACK MOUNTED TO RACK OFF OF GROUND.



**SIGNATURES
ON FILE**



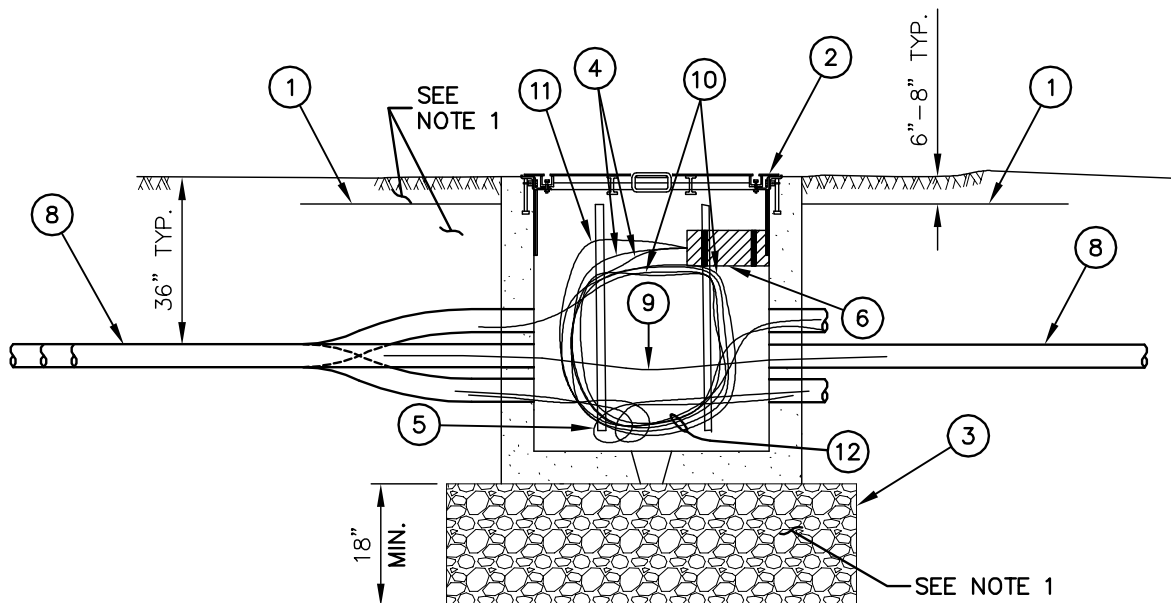
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

NO. 9 PULL BOX
WIRING AND SPLICING DETAIL

REVISION:

6/2007

T2-11
1 OF 2



CONDUIT PLACEMENT AND COILING DETAIL SIDE VIEW

NOTES:

1. BACKFILL WITH DESIGNATED SIZE NO. 57 AGGREGATE BELOW PULL BOX. BACKFILL AROUND SIDES OF PULL BOX WITH SELECT EXCAVATED MATERIAL AND THOROUGHLY COMPACT.
2. NUMBERS IN CIRCLES REFER TO ITEMS IN MATERIAL LIST.

MATERIAL LIST	
ITEM ○	DESCRIPTION
1	WARNING TAPE (AS REQUIRED)
2	NO. 9 PULL BOX
3	CLASS "B" CONC. AGG. DESIGNATED SIZE NO. 57
4	SINGLE MODE FIBER OPTIC CABLE (SMFO)
5	#8 GREEN BOND (AS REQUIRED)
6	FIBER OPTIC SPLICE CLOSURE
7	CONDUIT PER PLANS
8	#12 LOCATOR WIRE (BARE)
9	RACK & HOOK (EACH WALL TYP)
10	SINGLE MODE FIBER OPTIC BRANCH CABLE (AS REQUIRED)
11	100' NOMINAL SLACK (50' ENTRY/50' EXIT)

SIGNATURES
ON FILE

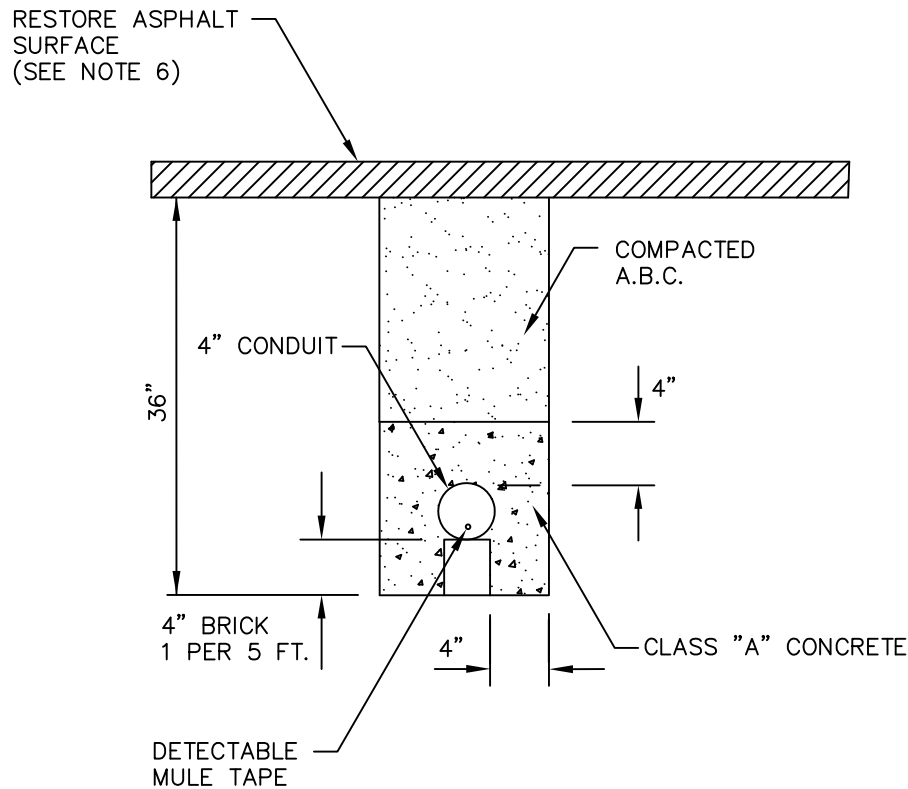


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
NO. 9 PULL BOX
WIRING AND SPLICING DETAIL

REVISION:

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T2-11
2 OF 2



CONDUIT ENCASEMENT

FULL WIDTH OF ROADWAY CURB TO CURB

NOTES:

1. DETECTABLE MULE TAPE SHALL BE INSTALLED IN ALL CONDUIT RUNS.
2. ALL EMPTY CONDUIT ENDS SHALL BE PLUGGED WITH CONDUIT PLUGS.
3. ALL CONDUIT SHALL BE SCHEDULE 40 PVC OR HDPE.
4. THIS DETAIL SHALL BE USED FOR TRAFFIC SIGNAL CONDUIT STREET CROSSINGS
5. IF CONDUIT IS UNDER NATIVE SOIL, $\frac{1}{2}$ SACK SLURRY ENCASEMENT IS ACCEPTABLE.
6. NEW PAVEMENT CUTS AND NEW PAVEMENT MUST CONFORM TO THE CITY OF GLENDALE ENGINEERING STANDARDS AND MAG STANDARD SPECIFICATIONS, SECTION 336.

APPROVED BY

DATE



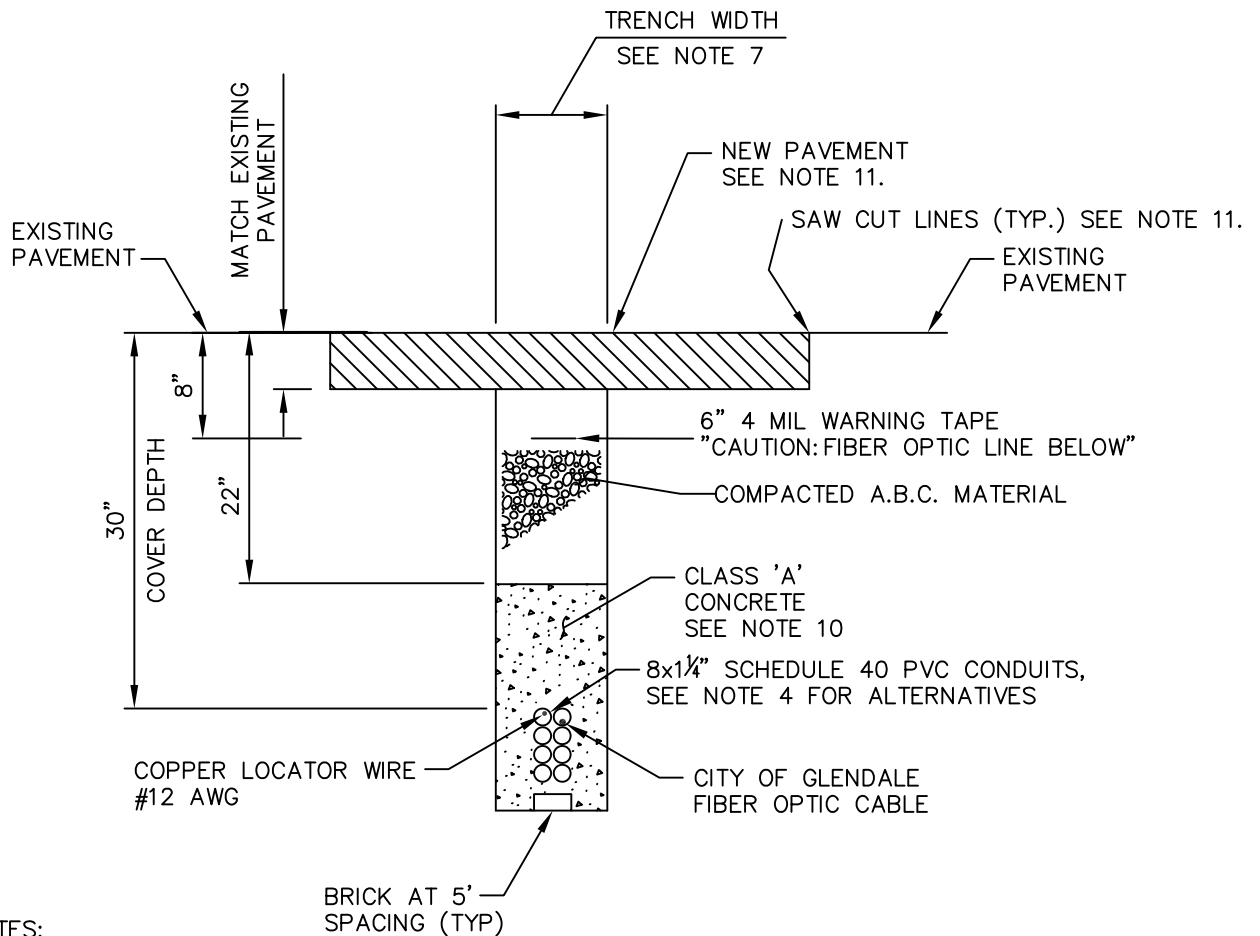
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

TYPICAL SIGNAL CONDUIT DETAILS

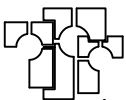
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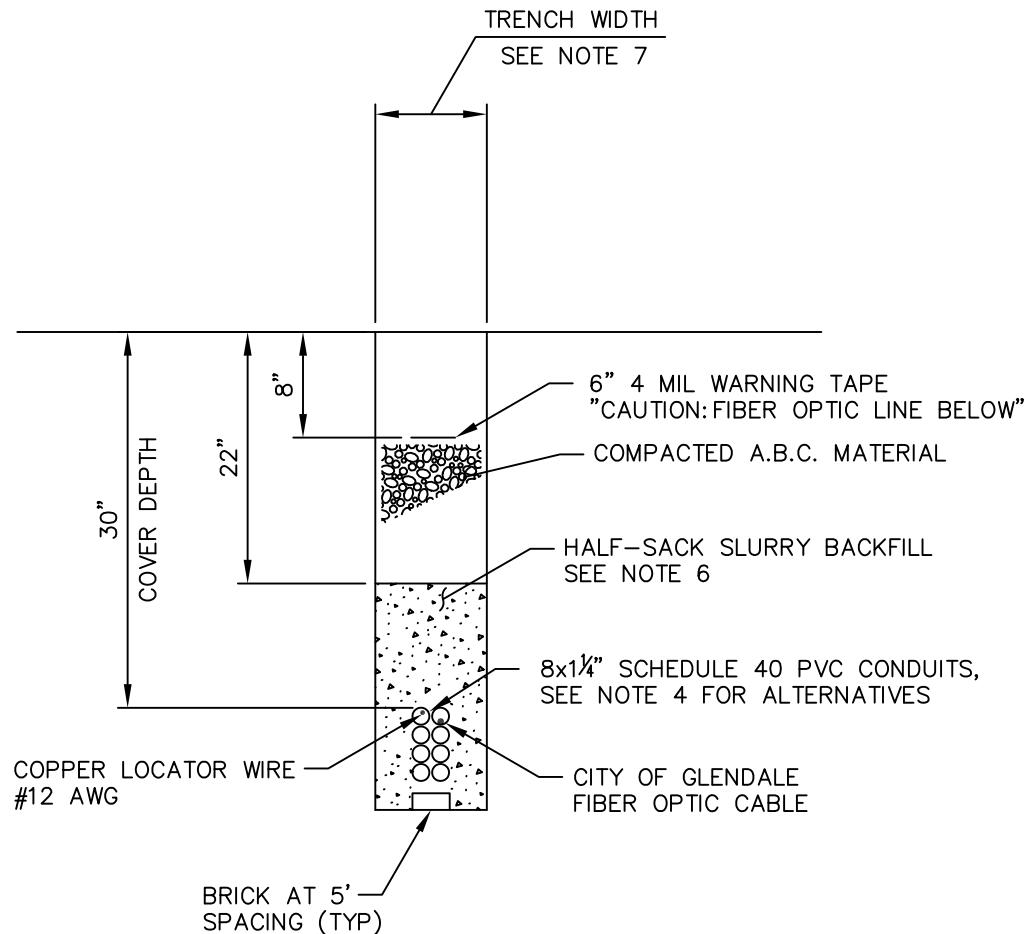
7/2009

T2-12

**GENERAL NOTES:**

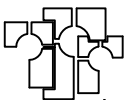
1. TRENCH DEPTH VARIES BASED ON CONFLICTS WITH EXISTING UTILITIES.
2. PROVIDING A TRENCH THAT IS A MINIMUM OF 38 INCHES DEEP INCLUDES INSTALLING FIBER OPTIC DUCT AND PROVIDING BACKFILL, PAVEMENT, AGGREGATE BASE COURSE COMPLETE IN PLACE. THIS ITEM SHALL PROVIDE A MINIMUM COVER DEPTH OF 30 INCHES OVER THE CONDUIT DUCT. ALL WARNING TAPE, CONDUIT SPACERS, BRICKS, AND COMPACTION WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE OF THE CONDUIT.
3. BORING OR DIRECTIONAL DRILLING IS GENERALLY THE PREFERRED METHOD WHEN INSTALLING CONDUIT UNDER EXISTING ASPHALT, TRENCHING MAY BE ALLOWED WITH ENGINEERS PRIOR APPROVAL.
4. IF THE CONDUIT ROUTING IS MODIFIED TO CROSS AN EXISTING PORTLAND CEMENT CONCRETE DRIVEWAY THE CONDUITS SHALL BE PLACED BY BORING.
5. ALL CONDUIT BENDS SHALL BE CONCRETE ENCASED FOR A MINIMUM OF TWO (2) FEET BEYOND EACH END OF THE BEND.
6. A $\frac{1}{2}$ SACK OF CEMENT SLURRY BACKFILL SHALL BE USED WHEN BACKFILLING CONDUITS INSTALLED IN A TRENCH IN EARTH. CLASS "A" CONCRETE SHALL BE USED AS BACKFILL FOR ALL CONDUITS INSTALLED UNDER PAVEMENT. CONDUITS SHALL BE SUPPORTED AND ANCHORED IN THE TRENCH PRIOR TO BACKFILLING WITH THE CEMENT SLURRY OR CLASS "A" CONCRETE.
7. TRENCH WIDTH MAY NOMINALLY VARY AND SHALL ALLOW FOR A MINIMUM OF 4" ON EITHER SIDE OF CONDUIT.
8. A SINGLE CONTINUOUS INSULATED COPPER LOCATOR WIRE #12 AWG SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF THE CONDUIT RUN.
9. PULL NEW FIBER OPTIC CABLE WITH NEW INNERDUCTS.
10. THE MINIMUM CEMENT CONTENT OF CLASS A CONCRETE IS 520 LBS. PER CUBIC YARD. THE MINIMUM COMPRESSIVE STRENGTH AS TESTED IN ACCORDANCE WITH ASTM C-39 SHALL BE 2400 PSI AT 14 DAYS AND 3000 PSI AT 28 DAYS. THE MAXIMUM SLUMP IS 5 INCHES WHEN TESTED IN ACCORDANCE WITH ASTM C-143.
11. NEW PAVEMENT CUTS AND NEW PAVEMENT MUST CONFORM TO THE CITY OF GLENDALE ENGINEERING STANDARDS AND MAG STANDARD SPECIFICATIONS, SECTION 336.

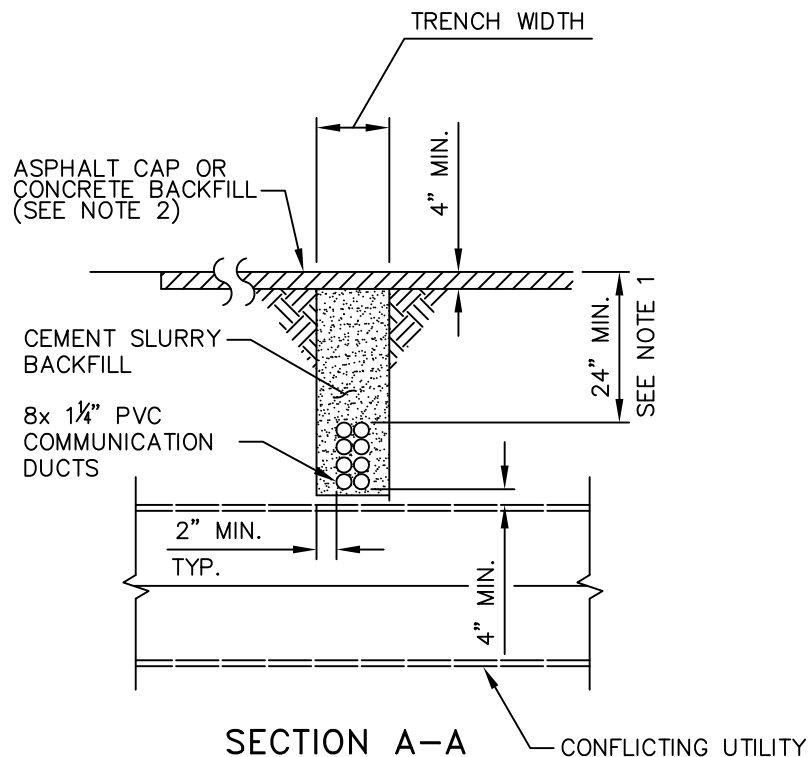
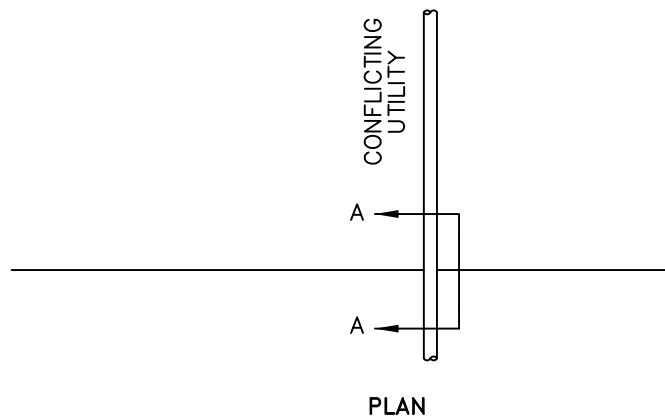
APPROVED BY _____ DATE _____	 GLENDALE	CITY OF GLENDALE TRAFFIC SIGNAL AND ITS STANDARDS ITS TRENCH DETAIL UNDER ASPHALTIC PAVEMENT	REVISION: 7/2009 T2-13
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GENERAL NOTES:

1. TRENCH DEPTH VARIES BASED ON CONFLICTS WITH EXISTING UTILITIES.
2. PROVIDING A TRENCH THAT IS A MINIMUM OF 38 INCHES DEEP INCLUDES INSTALLING FIBER OPTIC DUCT AND PROVIDING BACKFILL, PAVEMENT, AGGREGATE BASE COURSE COMPLETE IN PLACE. THIS ITEM SHALL PROVIDE A MINIMUM COVER DEPTH OF 30 INCHES OVER THE CONDUIT DUCT. ALL WARNING TAPE, CONDUIT SPACERS, BRICKS, AND COMPACTION WILL NOT BE PAID FOR DIRECTLY BUT SHALL BE CONSIDERED INCIDENTAL TO THE UNIT PRICE OF THE CONDUIT.
3. DIRECTIONAL DRILLING OR BORING SHALL BE ALLOWED WITH ENGINEERS PRIOR APPROVAL.
4. IF THE CONDUIT ROUTING IS MODIFIED TO CROSS AN EXISTING PORTLAND CEMENT CONCRETE DRIVEWAY THE CONDUITS SHALL BE PLACED BY BORING.
5. ALL CONDUIT BENDS SHALL BE CONCRETE ENCASED FOR A MINIMUM OF TWO (2) FEET BEYOND EACH END OF THE BEND.
6. A $\frac{1}{2}$ SACK OF CEMENT SLURRY BACKFILL SHALL BE USED WHEN BACKFILLING CONDUITS INSTALLED IN A TRENCH IN EARTH. CLASS "A" CONCRETE SHALL BE USED AS BACKFILL FOR ALL CONDUITS INSTALLED UNDER PAVEMENT. CONDUITS SHALL BE SUPPORTED AND ANCHORED IN THE TRENCH PRIOR TO BACKFILLING WITH THE CEMENT SLURRY OR CLASS "A" CONCRETE.
7. TRENCH WIDTH MAY NOMINALLY VARY FROM 6 INCHES TO 8 INCHES AND SHALL NOT EXCEED 10 INCHES.
8. A SINGLE CONTINUOUS INSULATED COPPER LOCATOR WIRE #12 AWG SHALL BE INSTALLED ALONG THE ENTIRE LENGTH OF THE CONDUIT RUN.
9. PULL NEW FIBER OPTIC CABLE WITH NEW INNERDUCTS.
10. THE MINIMUM CEMENT CONTENT OF CLASS A CONCRETE IS 520 LBS. PER CUBIC YARD. THE MINIMUM COMPRESSIVE STRENGTH AS TESTED IN ACCORDANCE WITH ASTM C-39 SHALL BE 2400 PSI AT 14 DAYS AND 3000 PSI AT 28 DAYS. THE MAXIMUM SLUMP IS 5 INCHES WHEN TESTED IN ACCORDANCE WITH ASTM C-143.

<div>APPROVED BY _____</div> <div>DATE _____</div>	 GLENDALE	<div>CITY OF GLENDALE</div> <div>TRAFFIC SIGNAL AND ITS STANDARDS</div> <div>ITS TRENCH DETAIL</div> <div>IN UNPAVED AREAS</div>	<div>REVISION:</div> <div>7/2009</div> <div>T2-14</div>
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**NOTE:**

1. IF 24" MINIMUM COVER CANNOT BE OBTAINED, THEN TRUNKLINE CONDUIT SHALL BE JACKED OR BORED UNDER OBSTRUCTION. SEE TYPICAL "B", THIS SHEET.
2. PAVEMENT CUTS AND NEW PAVEMENT MUST CONFORM TO THE CITY OF GLENDALE ENGINEERING STANDARDS AND MAG STANDARD SPECIFICATIONS, SECTION 336.

APPROVED BY

DATE

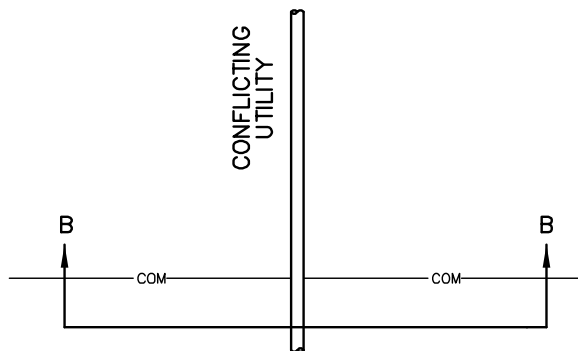


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
COMMUNICATION CONDUIT
CROSSING OVER EXISTING UTILITY

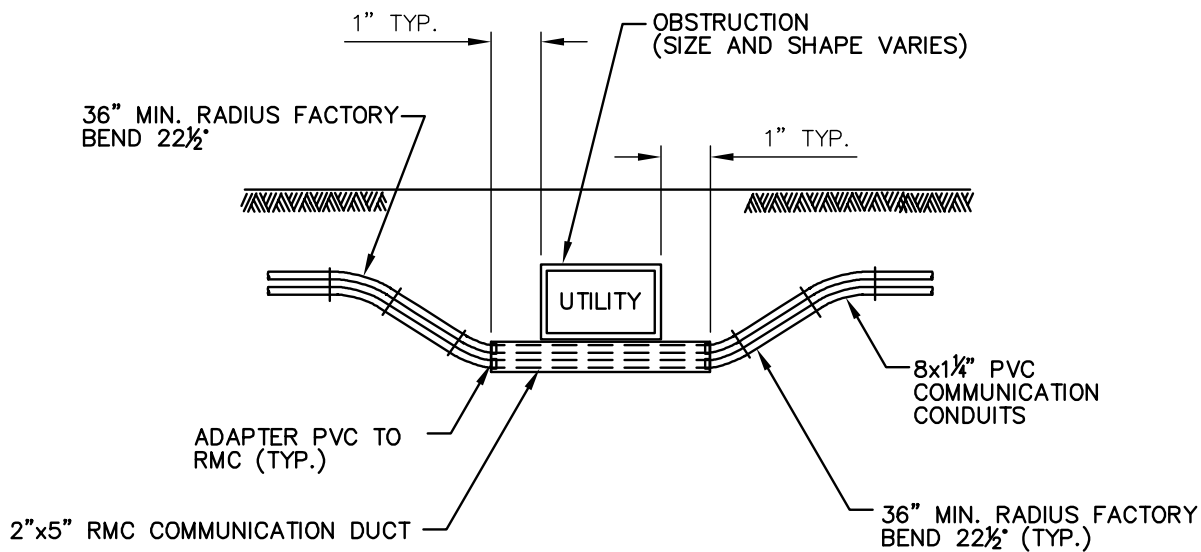
REVISION:

7/2009

T2-15



PLAN



SECTION B-B

NOTE:

1. TYPICAL SECTION B-B APPLIES ONLY WHEN 24" MINIMUM COVER CANNOT BE OBTAINED WHEN GOING OVER EXISTING UTILITY.

**SIGNATURES
ON FILE**

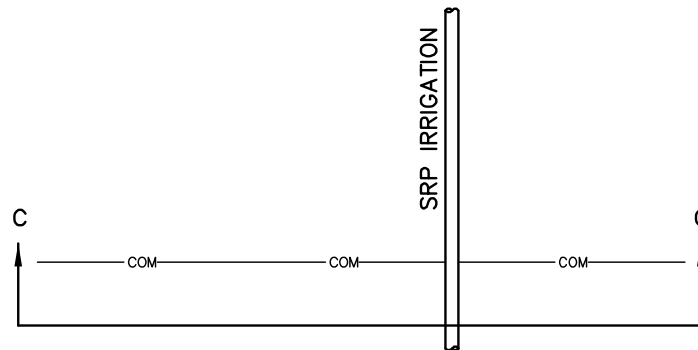


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
COMMUNICATION CONDUIT
CROSSING UNDER EXISTING UTILITY

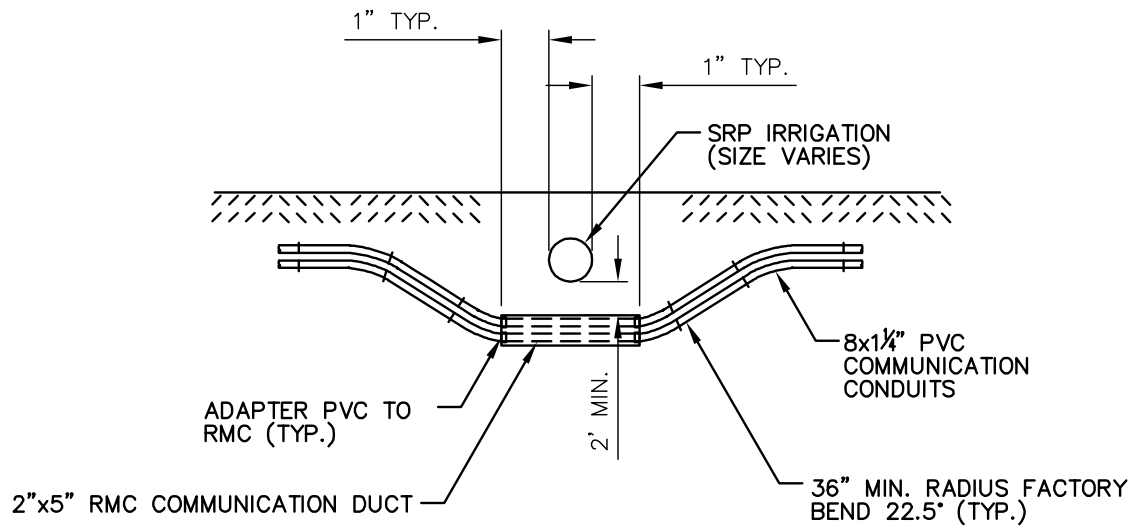
REVISION:

6/2007

T2-16



PLAN



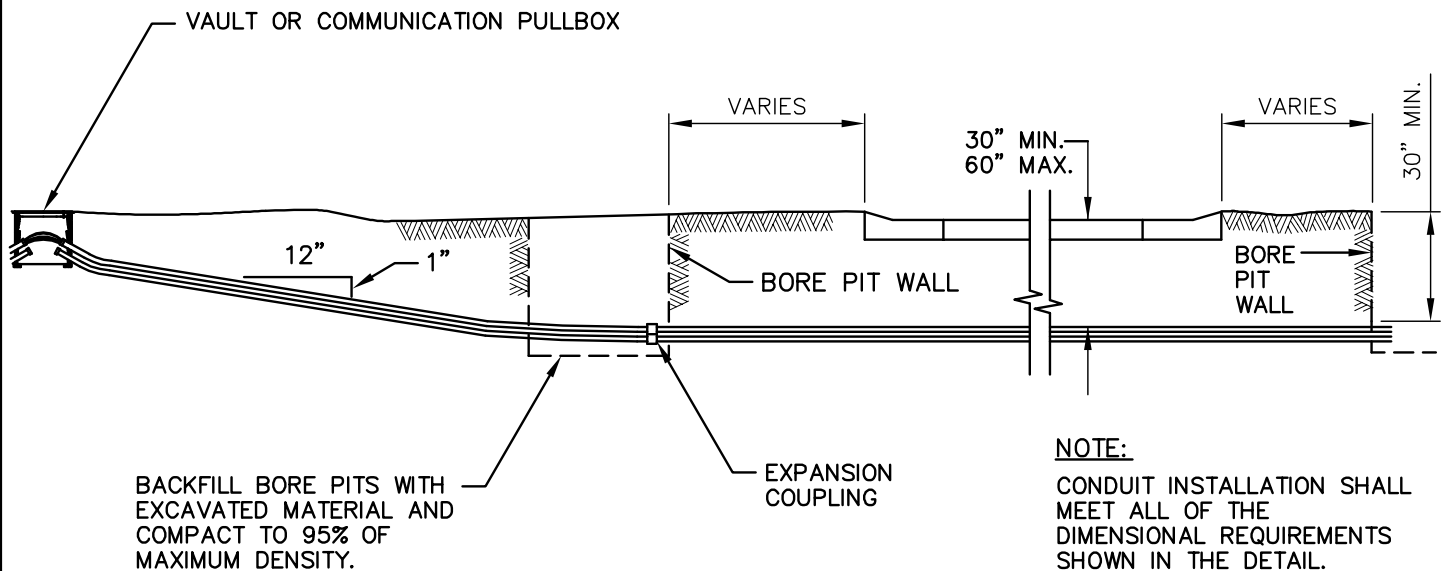
SECTION C-C

SIGNATURES
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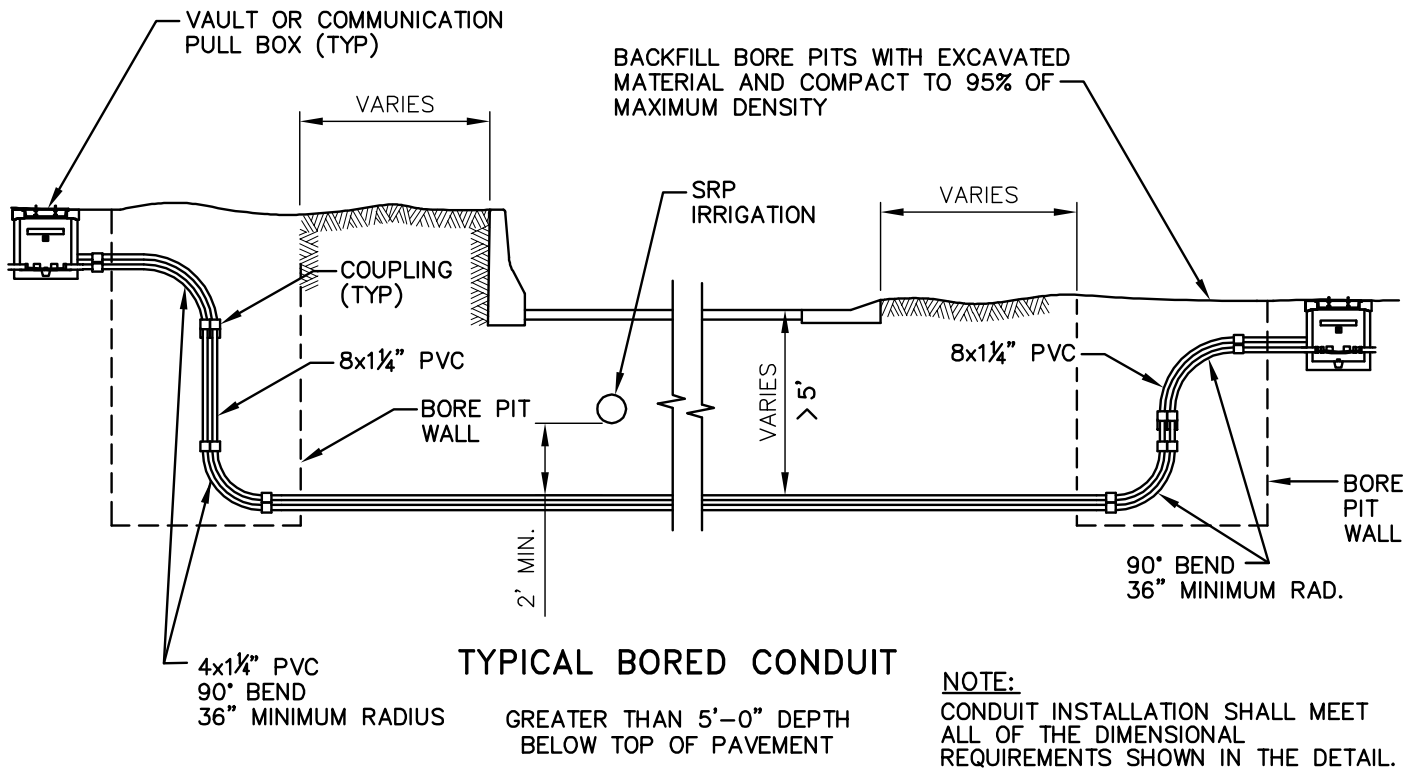
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
COMMUNICATION CONDUIT
CROSSING UNDER SRP IRRIGATION LINE

REVISION:
6/2007
T2-17



TYPICAL BORED CONDUIT

FOR DEPTHS UP TO 5'-0"
BELOW TOP OF PAVEMENT



TYPICAL BORED CONDUIT

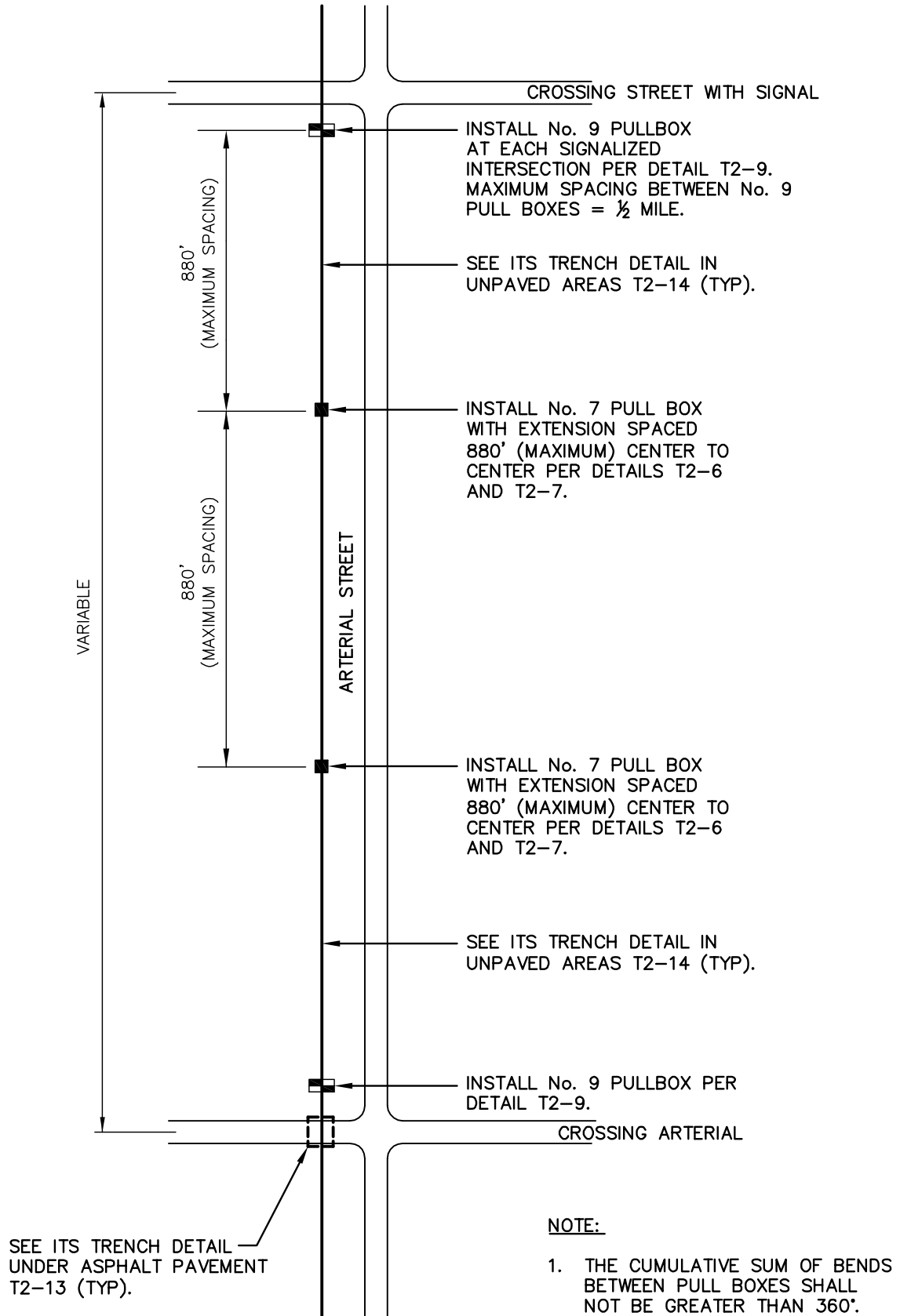
GREATER THAN 5'-0"
BELOW TOP OF PAVEMENT

SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
BORED CONDUIT INSTALLATION

REVISION:
6/2007
T2-18

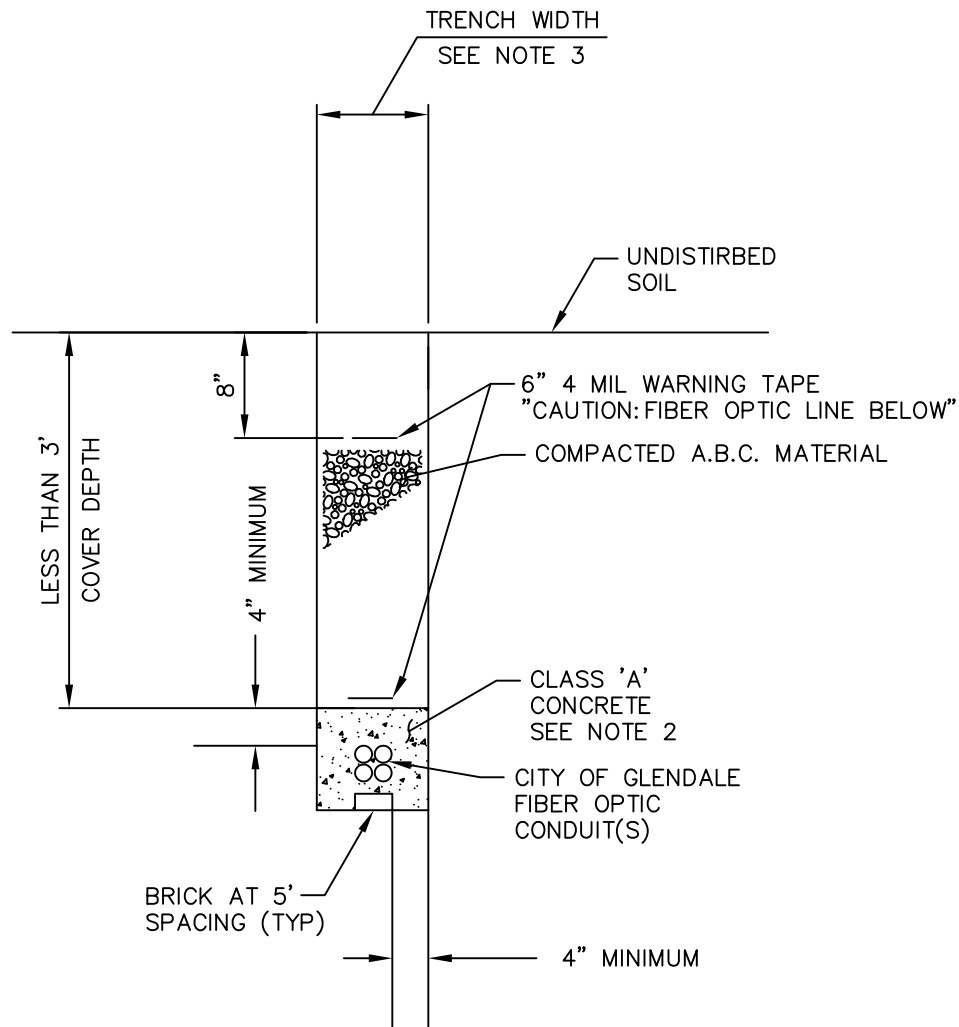


SIGNATURES
ON FILE




CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPICAL ITS PULL BOX
AND CONDUIT LOCATIONS

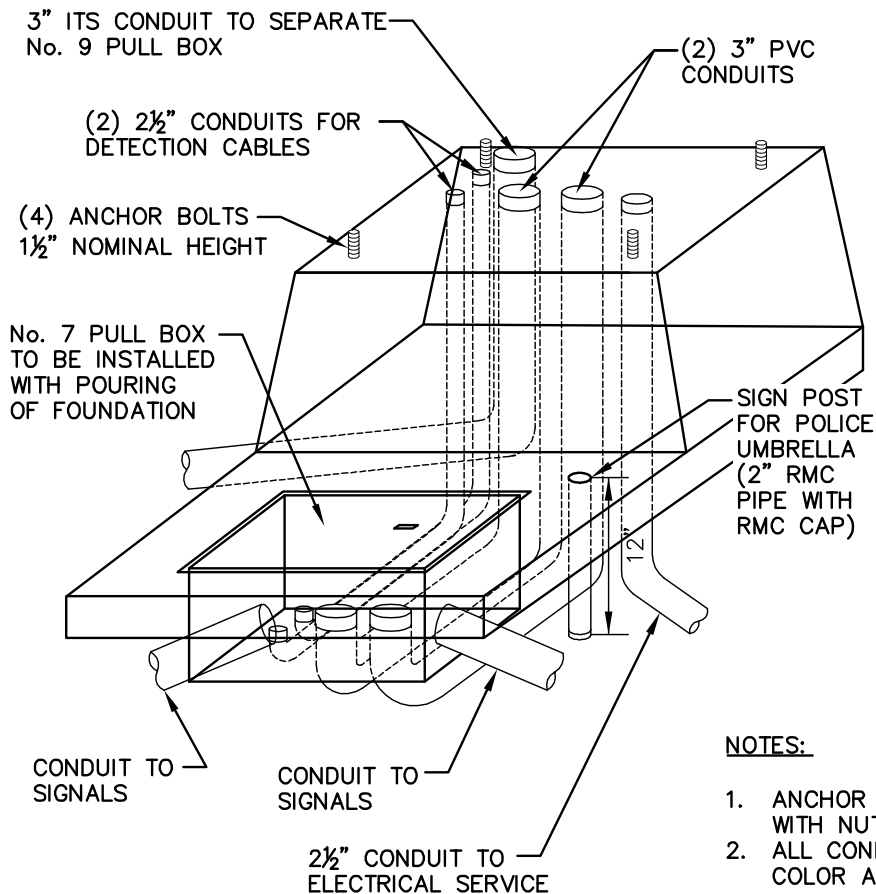
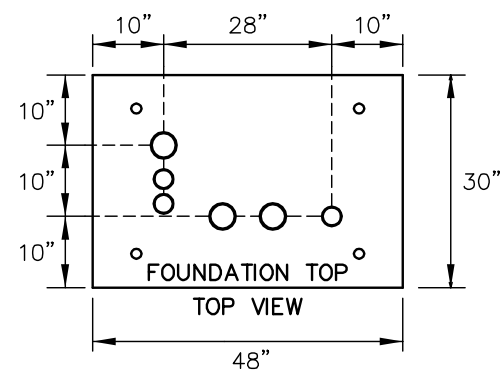
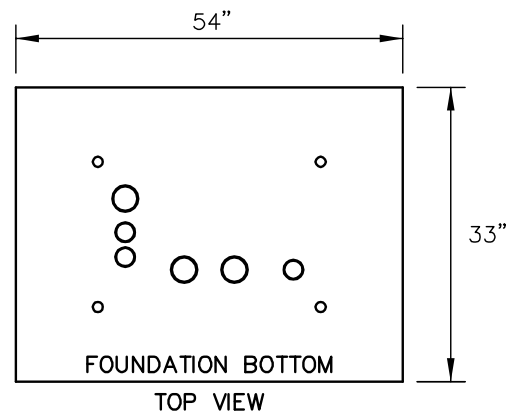
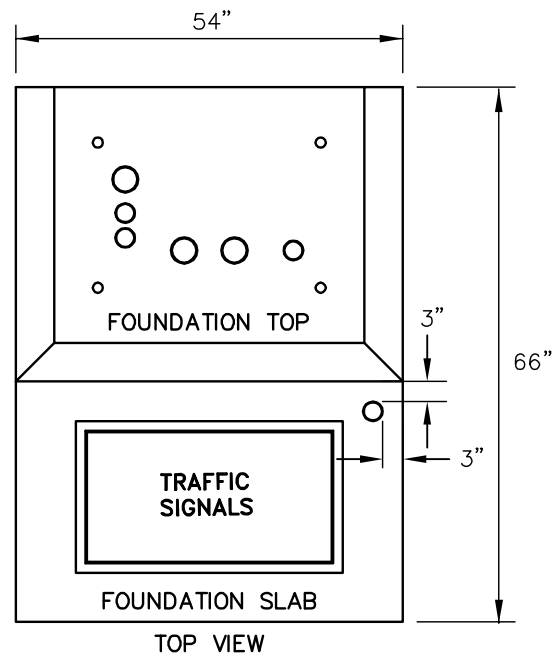
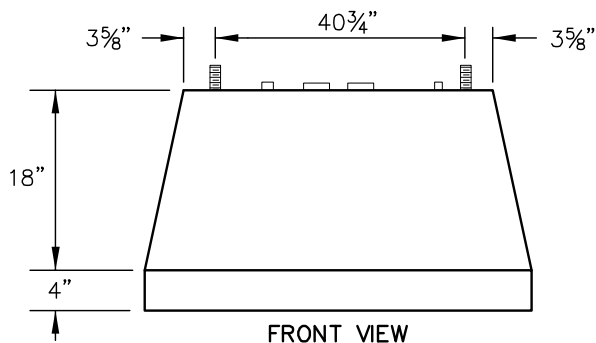
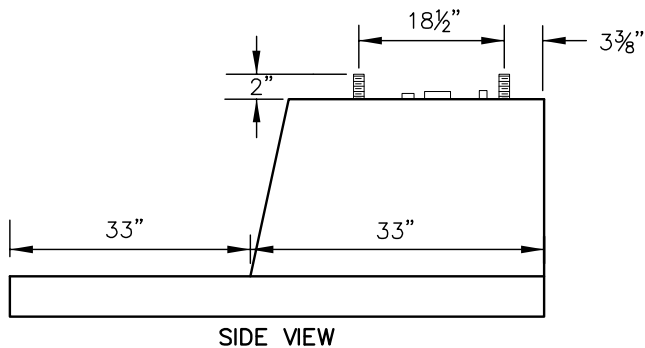
REVISION:
6/2007
T2-19



GENERAL NOTES:

1. TRENCH DEPTH VARIES BASED ON EXISTING FIELD CONDITIONS.
2. A ½ SACK OF CEMENT SLURRY BACKFILL SHALL BE USED WHEN BACKFILLING CONDUITS INSTALLED IN A TRENCH IN EARTH. CLASS "A" CONCRETE SHALL BE USED AS BACKFILL FOR ALL CONDUITS INSTALLED UNDER PAVEMENT. CONDUITS SHALL BE SUPPORTED AND ANCHORED IN THE TRENCH PRIOR TO BACKFILLING WITH THE CEMENT SLURRY OR CLASS "A" CONCRETE.
3. TRENCH WIDTH MAY VARY BASED UPON TYPE AND SIZE OF CONDUIT(S), A MINIMUM OF 4" OF CONCRETE MUST BE PLACED AROUND THE TOP AND SIDES OF THE EXISTING CONDUIT(S).
4. THE DEPTH OF THE CONDUIT SHALL BE DETERMINED BY POTHOLING (VACUUM EXTRACTION OR HAND DIGGING ONLY, A.R.S. 40-360.21.4) IN A MINIMUM OF 3 LOCATIONS (ENDS AND MIDDLE, AND DEPTH MUST BE VERIFIED BY C.O.G. ENGINEERING INSPECTOR OR BY C.O.G. ITS PERSONNEL).
5. CONDUIT SHALL BE ENCASED WITH CLASS "A" CONCRETE WHEN THE DEPTH OF THE CONDUIT IS LESS THAN 3 FEET BELOW THE DEEPEST GRADE CUT IN THE CONFLICT AREA.
6. THE MINIMUM CEMENT CONTENT OF CLASS A CONCRETE IS 520 LBS. PER CUBIC YARD. THE MINIMUM COMPRESSIVE STRENGTH AS TESTED IN ACCORDANCE WITH ASTM C-39 SHALL BE 2400 PSI AT 14 DAYS AND 3000 PSI AT 28 DAYS. THE MAXIMUM SLUMP IS 5 INCHES WHEN TESTED IN ACCORDANCE WITH ASTM C-143.
7. CONDUIT SIZE AND NUMBER OF CONDUITS VARIES.

<p>APPROVED BY _____ DATE _____</p>		<p>CITY OF GLENDALE TRAFFIC SIGNAL AND ITS STANDARDS ITS TRENCH DETAIL NEW PAVEMENT CONSTRUCTION OVER EXISTING ITS FACILITIES</p>	<p>REVISION: 1/2009</p>
			<p>T2-20</p>

**NOTES:**

1. ANCHOR BOLTS SHALL BE $\frac{3}{4}$ " X 11" X 5" COMPLETE WITH NUTS AND WASHERS.
2. ALL CONDUIT SHALL BE SCHEDULE 40 PVC GREY IN COLOR AND MARKED FOR ELECTRIC USE.

**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
FOUNDATION BASE FOR
8 PHASE CONTROLLER

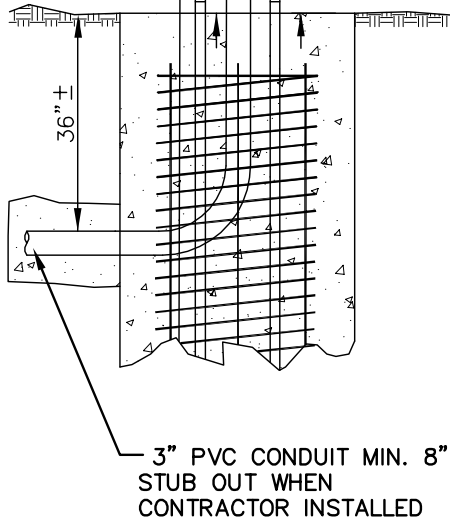
REVISION:

6/2007

T3-1

25' OF NO. 8 BOND
WIRE TO RUN FROM
ANCHOR BOLT TO
BOTTOM OF
FOUNDATION FOR
GROUND WIRE

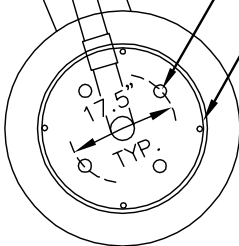
3" GREY PVC
CONDUIT PLUG



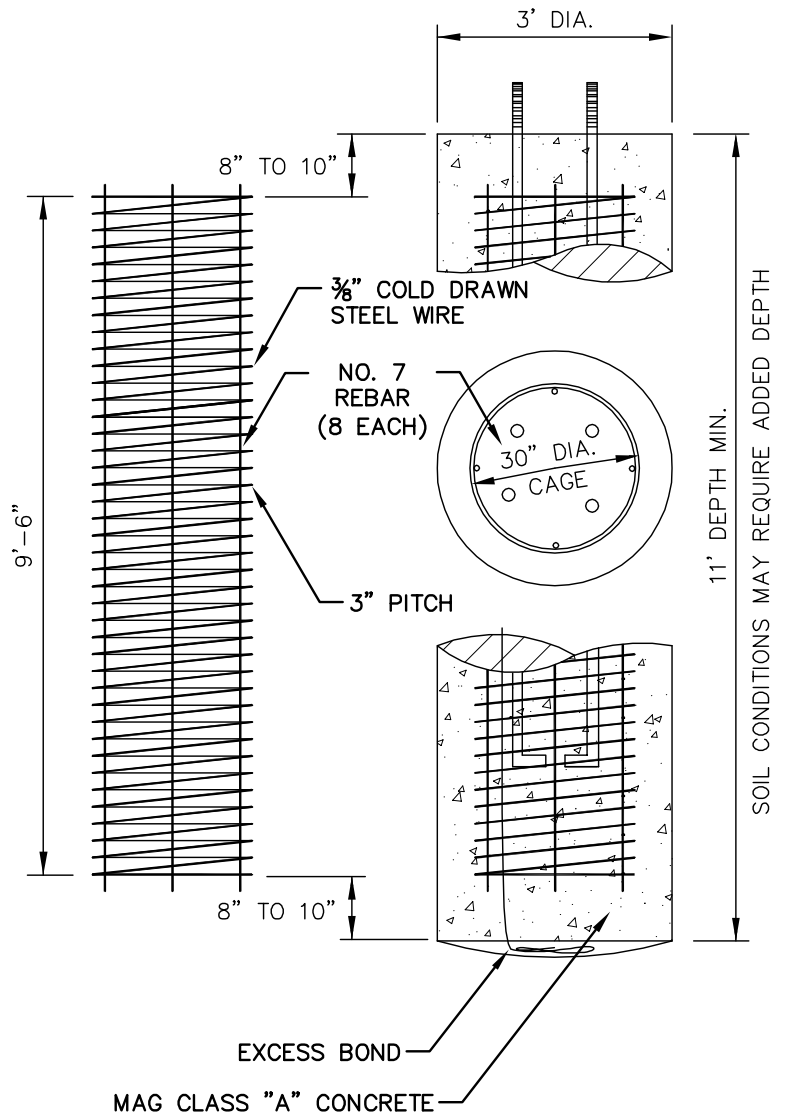
3" PVC GREY IN COLOR
ELECTRICAL CONDUIT
(SEE NOTE 5)

(4) ANCHOR BOLTS*

REINFORCING CAGE



*ANCHOR BOLT CIRCLE
SHALL BE 17.5" TYPICALLY.



NOTES:

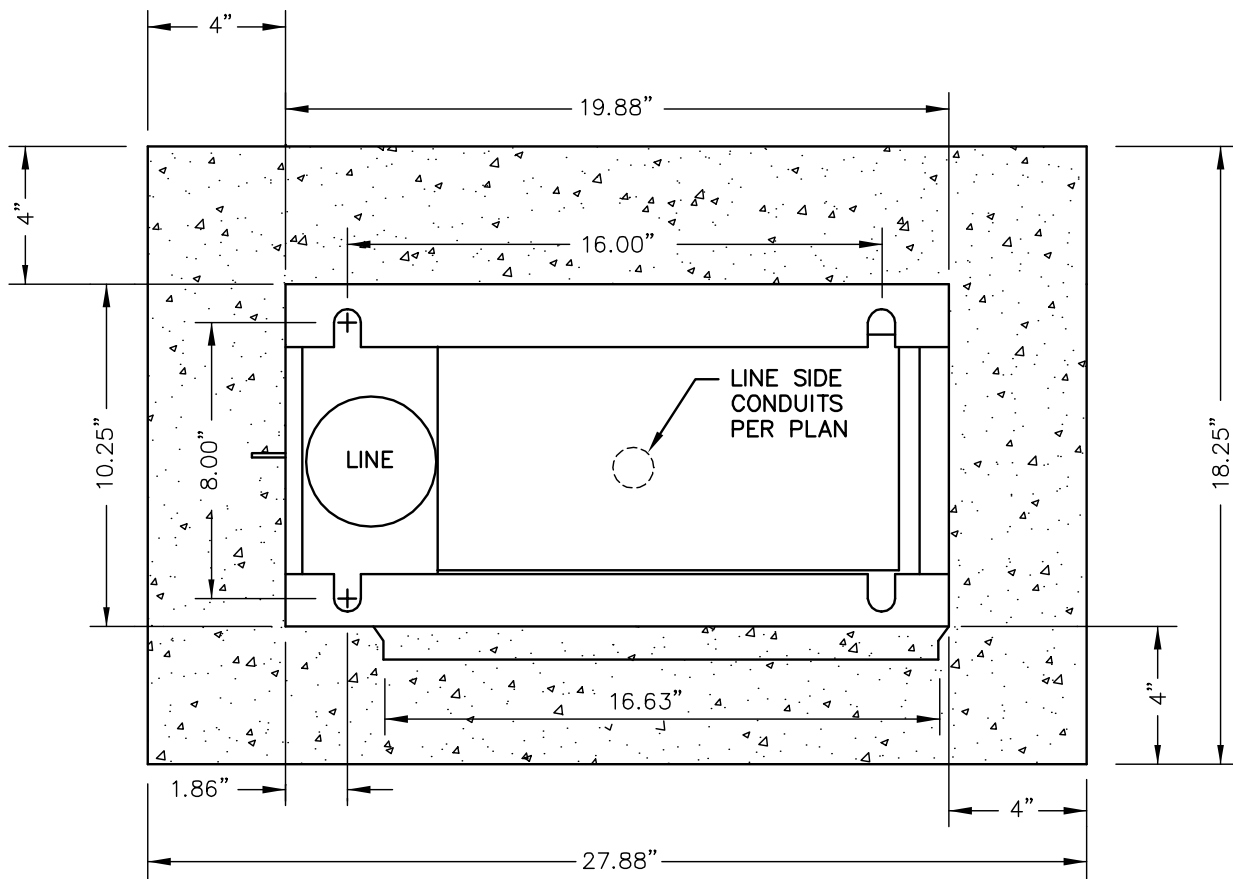
1. ANCHOR BOLTS SHALL BE 2"x 90" WITH 6" L BENDS, AND BE FABRICATED FROM STEEL WHICH MEETS OR EXCEEDS THE MINIMUM REQUIREMENTS OF ASTM A 325 AND SHALL BE ELECTRO-GALVANIZED IN ACCORDANCE WITH THE REQUIREMENTS OF ASTM B 633. WELDING SHALL NOT BE PERFORMED ON ANY PORTION OF THE BODY OF THESE ANCHOR BOLTS.
2. CONTRACTOR TO FURNISH AND INSTALL ANCHOR BOLTS WHEN CONSTRUCTING FOUNDATION.
3. ANCHOR BOLTS NOT MEETING SPECS LISTED ABOVE SHALL NOT BE ACCEPTED UNLESS STAMPED CERTIFICATION FROM A STRUCTURAL ENGINEER IS PROVIDED THAT STATE THE ANCHOR BOLTS MEET OR EXCEED THE REQUIREMENTS LISTED ABOVE.
4. FOUNDATION SHALL BE POURED IN DRILLED HOLE PER M.A.G. CLASS A 3000 P.S.I. WITH 4" SLUMP.
5. ALL CONDUIT SHALL BE SCHEDULE 40 PVC GREY IN COLOR AND MARKED FOR ELECTRIC USE.

SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
FOUNDATION FOR SIGNAL POLES

REVISION:
2/2008
T3-2



FOOTPRINT OF SERVICE/UPS CABINET

NOTES:

1. CONTRACTOR TO SUBMIT SHOP DRAWINGS OF CABINET FOUNDATION.
2. FOUNDATION SHALL EXTEND A MINIMUM OF 4" BEYOND OUTER WALL OF CABINET ON ALL SIDES.
3. FOUNDATION/CABINET DIMENSIONS ARE BASED ON THE DIMENSIONS FOR A TESCO MODEL 27-22BBS CABINET.
4. SEE NEC AND MANUFACTURER FOR CABINET GROUNDING REQUIREMENT SPECIFICATIONS.

SIGNATURES
ON FILE



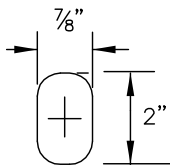
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

SERVICE/UPS FOUNDATION

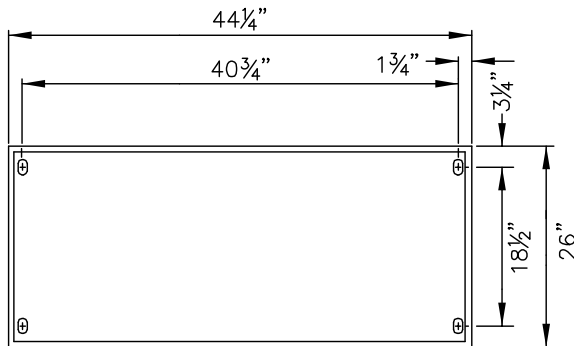
REVISION:

6/2007

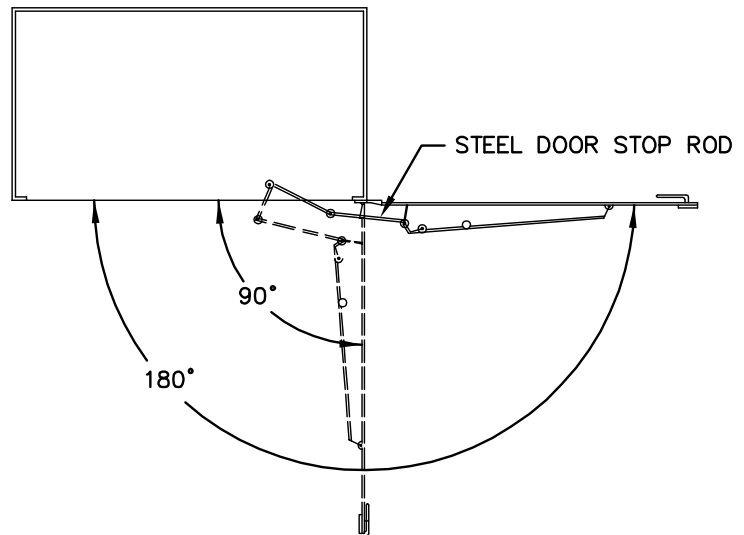
T3-3



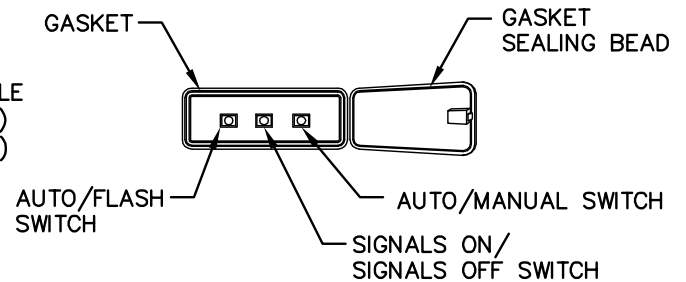
**BOLT SLOT DETAIL
(TYPICAL)**



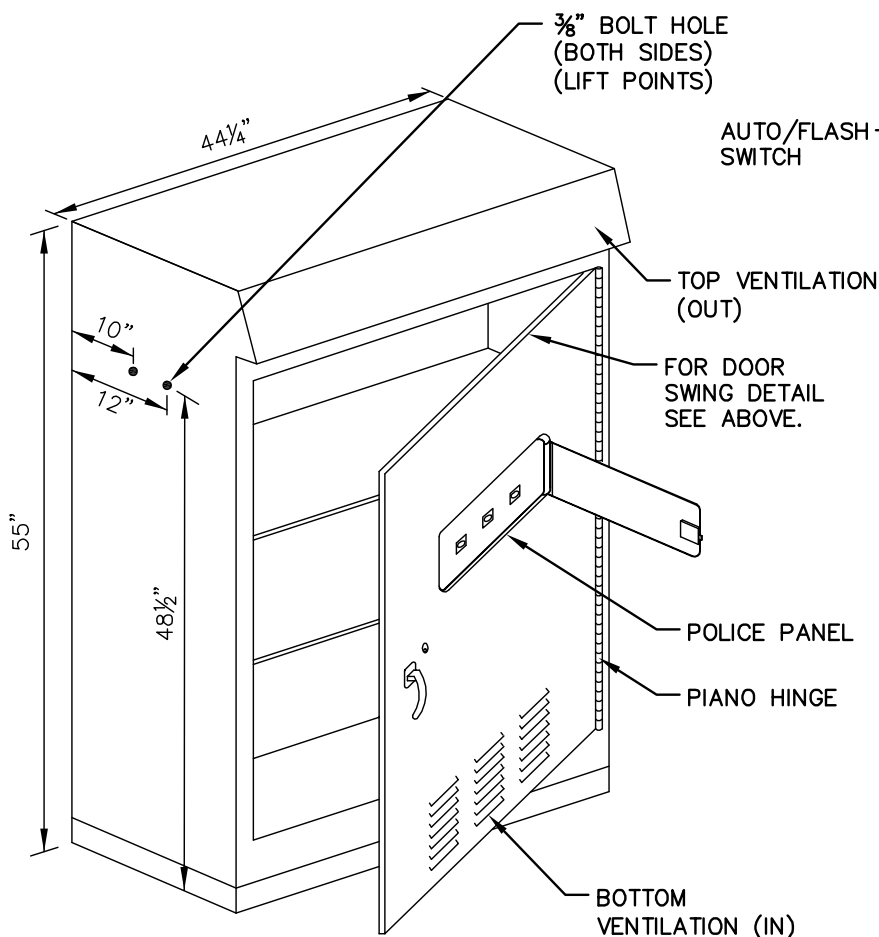
SECTION A-A



2 POSITION DOOR STOP



POLICE PANEL



NOTES:

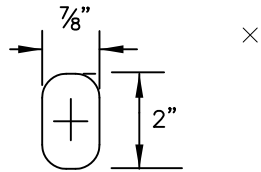
1. FOR CONSTRUCTION REQUIREMENTS SEE CITY SPECIFICATIONS.
2. THE DOOR SHALL BE RAIN TIGHT AND DUST PROOF.
3. THIS CABINET SHALL BE FURNISHED WITH FOUR $\frac{5}{8}$ " ANCHOR BOLTS, WITH TWO FLAT WASHERS AND ONE LOCK WASHER PER BOLT.
4. FOR CONCRETE FOUNDATION DETAIL SHEET T3-1.
5. SHELVES SHALL BE REMOVABLE AND ADJUSTABLE FOR VERTICAL SPACING. SHELVES SHALL BE SHEET METAL AS PER CITY OF GLENDALE SPECIFICATIONS.
6. CABINET SHALL BE INSTALLED SO THAT BACK WALL IS FLUSHED WITH CONCRETE FOUNDATION.
7. CONTRACTOR IS RESPONSIBLE TO MAKE SURE CABINETS FIT ON BOLT PATTERN.

**SIGNATURES
ON FILE**

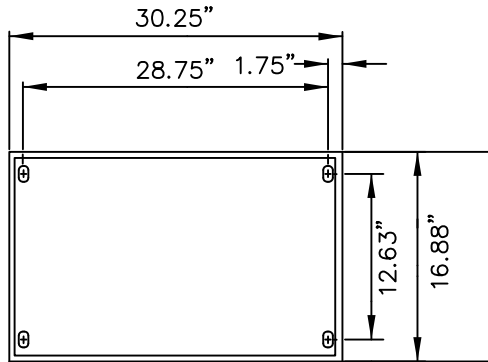


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
SIGNAL CONTROL CABINET SHELL

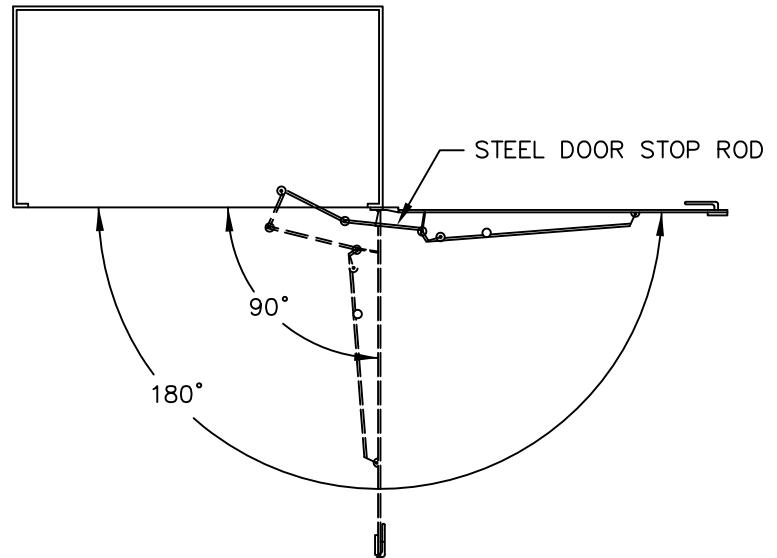
REVISION:
6/2007
T4-1



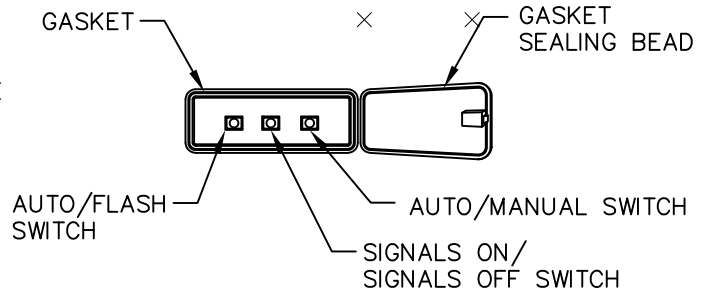
**BOLT SLOT DETAIL
(TYPICAL)**



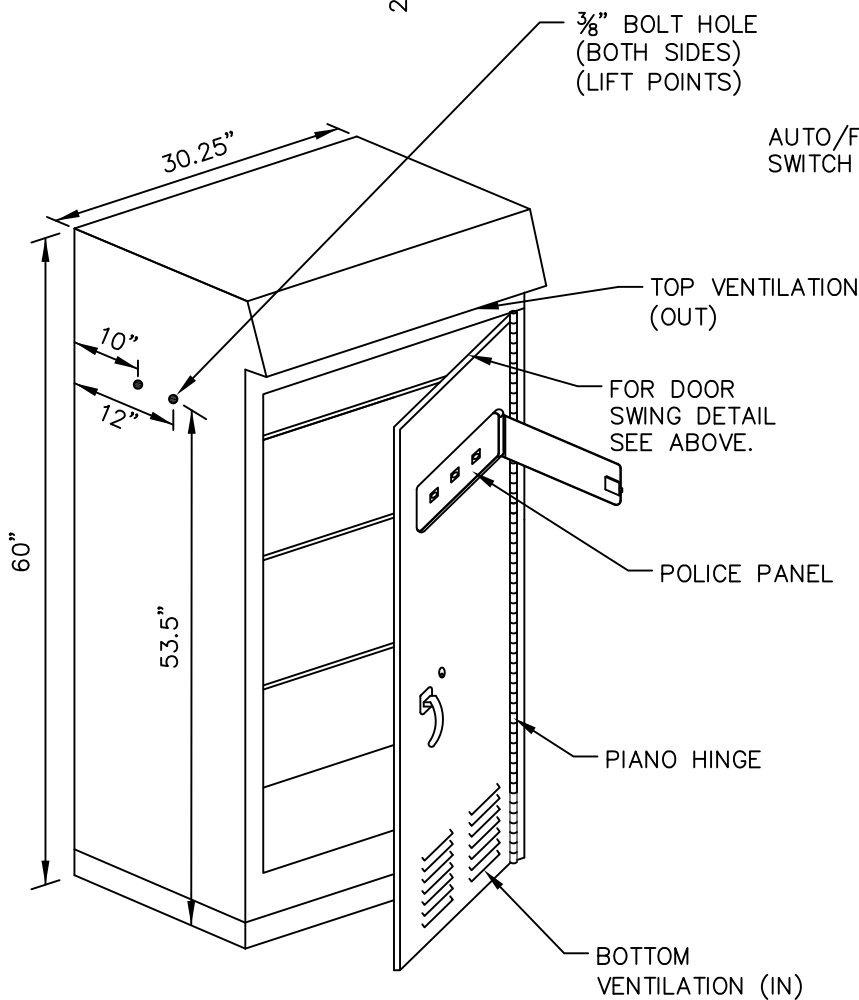
SECTION A-A



2 POSITION DOOR STOP



POLICE PANEL



NOTES:

1. FOR CONSTRUCTION REQUIREMENTS SEE CITY SPECIFICATIONS.
2. THE DOOR SHALL BE RAINTIGHT AND DUSTPROOF.
3. THIS CABINET SHALL BE FURNISHED WITH FOUR $\frac{5}{8}$ " ANCHOR BOLTS, WITH TWO FLAT WASHERS AND ONE LOCK WASHER PER BOLT.
4. FOR CONCRETE FOUNDATION DETAIL SHEET T3-1.
5. SHELVES SHALL BE REMOVABLE AND ADJUSTABLE FOR VERTICAL SPACING. SHELVES SHALL BE SHEET METAL AS PER CITY OF GLENDALE SPECIFICATIONS.
6. CABINET SHALL BE INSTALLED SO THAT BACK WALL IS FLUSHED WITH CONCRETE FOUNDATION.
7. CONTRACTOR IS RESPONSIBLE TO MAKE SURE CABINETS FIT ON BOLT PATTERN.

APPROVED BY _____

DATE _____

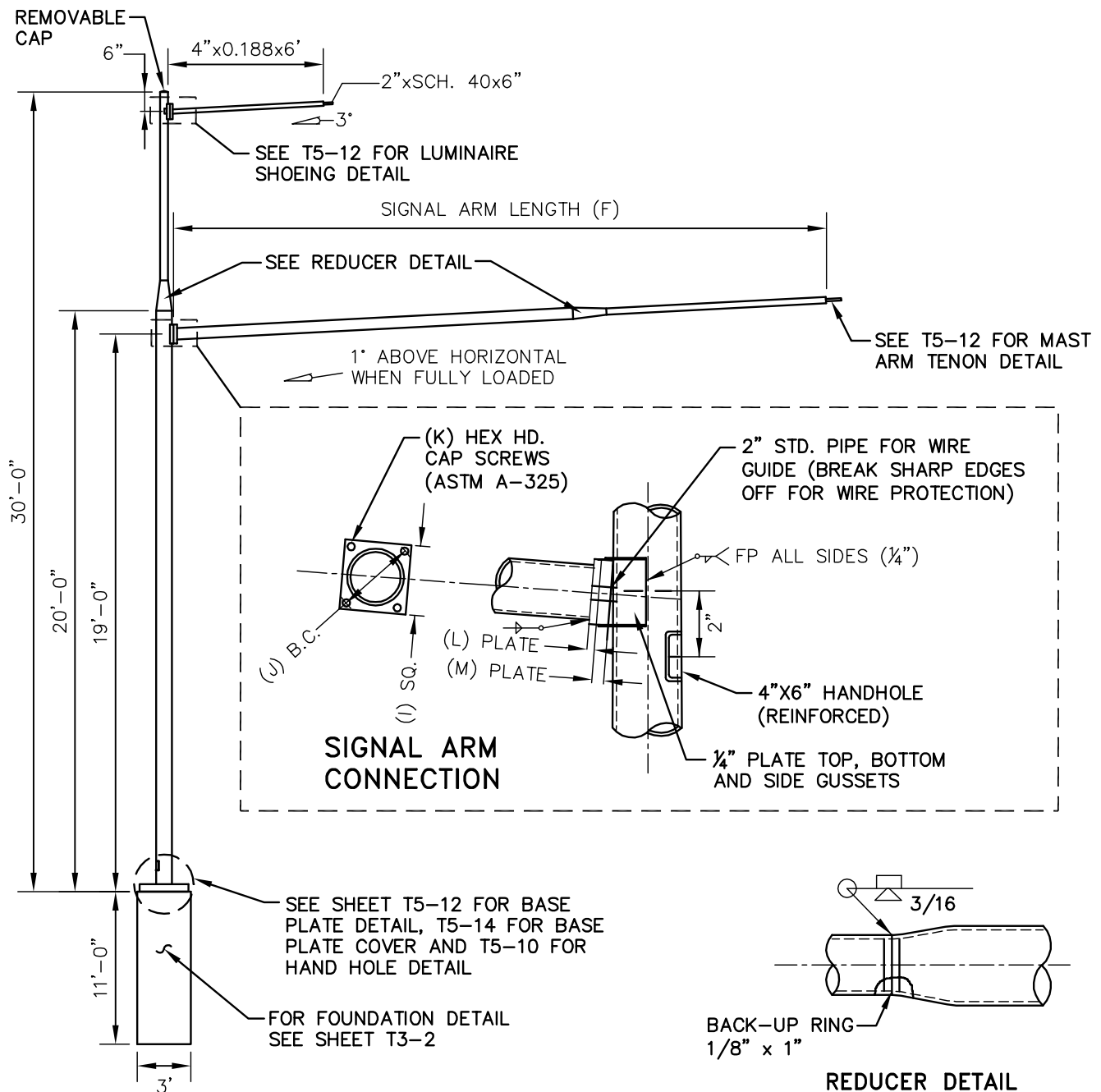


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

SIGNAL CONTROL CABINET SHELL SIZE 5A

REVISION:
12/2009

T4-2



F	1ST SECTION I.D.xTHK.xLENGTH	2ND SECTION I.D.xTHK.xLENGTH
25'	8"x0.188x15'	8"x0.188x10'

NOTE:

- POLES TO BE INSTALLED ON EXISTING FOUNDATIONS WILL HAVE BOLT CIRCLE FIELD VERIFIED BY CONTRACTOR, PRIOR TO ORDERING.

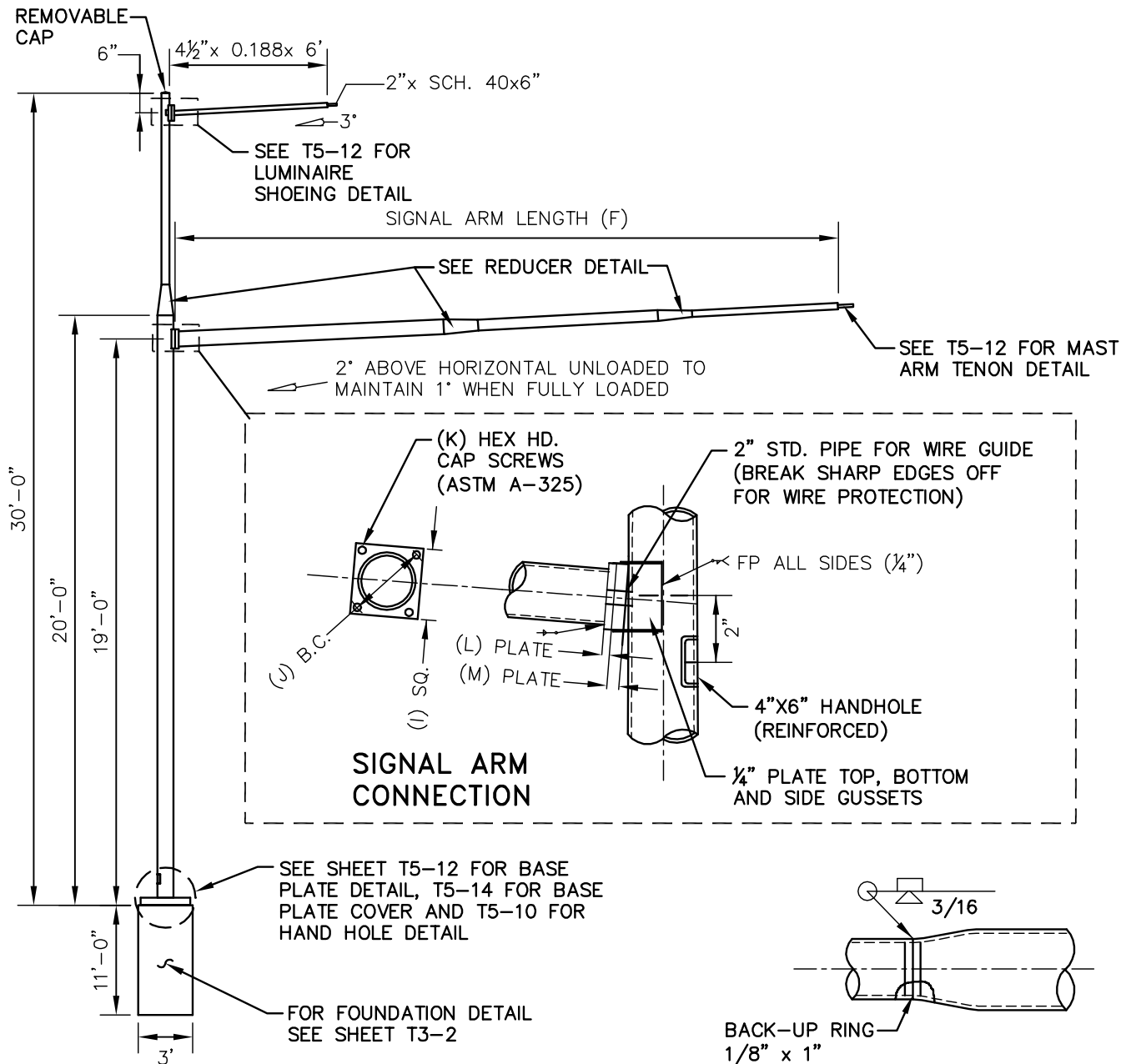
POLE TYPE	ARM E	POLE DATA			LUMINAIRE RISER	SIGNAL ARM CONNECTION DATA				
		I.D.xTHK.xLENGTH	B	C	I.D.xTHK.xLENGTH	I	J	K	L	M
Q104	25	8"x0.188x20'	18"	17"-18" SLOT	6"x0.188x 10'	13"	13"	1"x8NCx2 1/2"	1"	1 1/4"

PAINT V54 - BLACK (4 MIL DRY)

SIGNATURES
ON FILE

CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPE Q104 SIGNAL POLE
AND MAST ARM

REVISION:
2/2008
T5-1



F	1ST SECTION I.D.xTHK.xLENGTH	2ND SECTION I.D.xTHK.xLENGTH	3RD SECTION I.D.xTHK.xLENGTH
30'	8 5/8" x 0.250 x 10'	6 5/8" x 0.188 x 10'	5 5/8" x 0.134 x 10'
35'	8 5/8" x 0.322 x 15'	6 5/8" x 0.188 x 10'	5 5/8" x 0.134 x 10'
40'	8 5/8" x 0.322 x 20'	6 5/8" x 0.188 x 10'	5 5/8" x 0.134 x 10'

NOTE:

- POLES TO BE INSTALLED ON EXISTING FOUNDATIONS WILL HAVE BOLT CIRCLE FIELD VERIFIED BY CONTRACTOR, PRIOR TO ORDERING.

POLE TYPE	ARM E	POLE DATA			LUMINAIRE RISER	SIGNAL ARM CONNECTION DATA				
		I.D.x THK.x LENGTH	B	C	I.D.x THK.x LENGTH	I	J	K	L	M
Q106	30—40	12¾"x0.250x20'	18"	17"—18" SLOT	10¾"x0.188x10'	13"	13"	1¼"x7NCx3"	1¼"	1½"

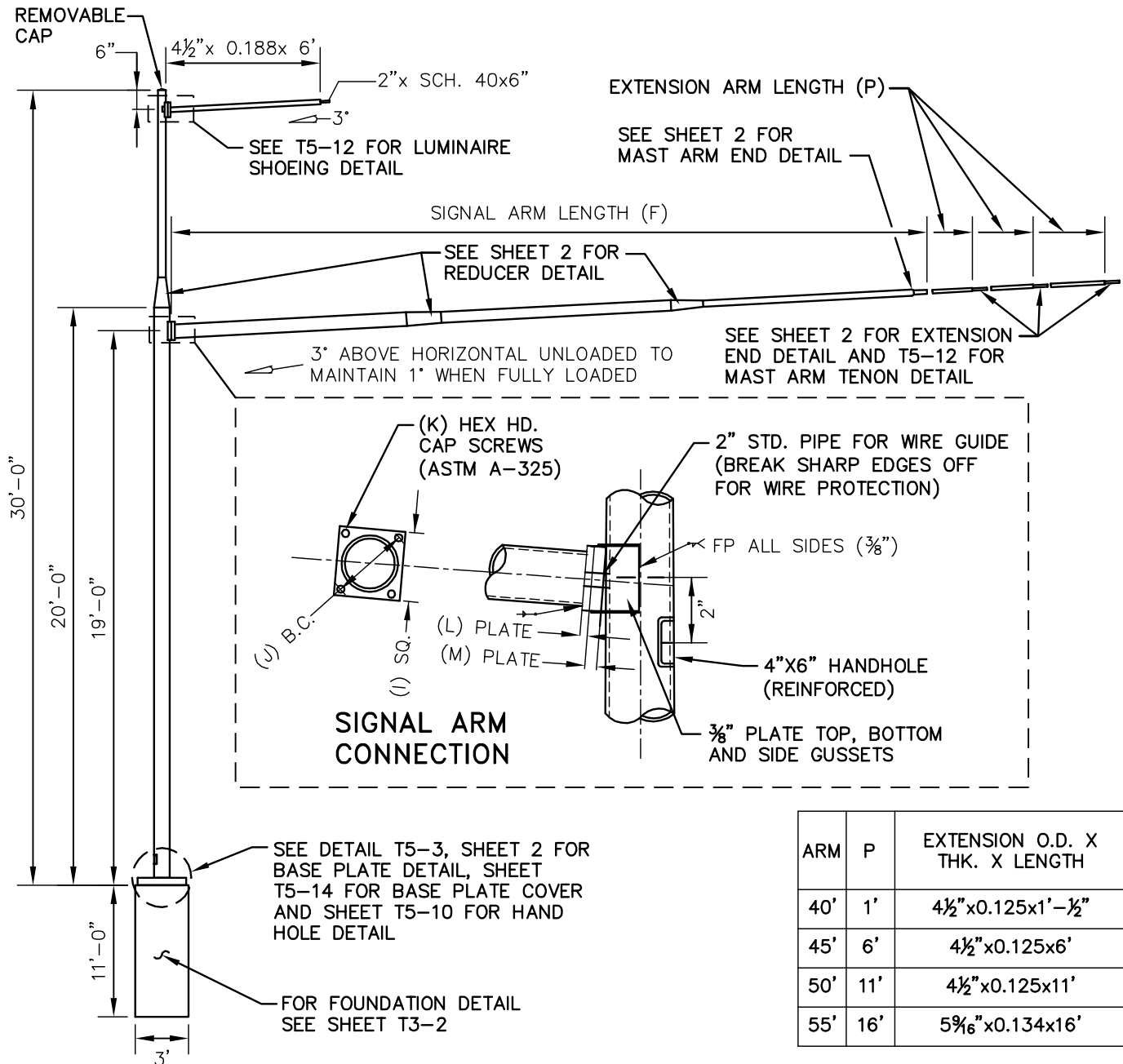
PAINT V54 - BLACK (4 MIL DRY)

SIGNATURES
ON FILE

CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPE Q106 SIGNAL POLE
AND MAST ARM

REVISION:
2/2008

T5-2

**NOTE:**

1. POLES TO BE INSTALLED ON EXISTING FOUNDATIONS WILL HAVE BOLT CIRCLE FIELD VERIFIED BY CONTRACTOR, PRIOR TO ORDERING.

F	1ST SECTION I.D.xTHK.xLENGTH	2ND SECTION I.D.xTHK.xLENGTH	3RD SECTION I.D.xTHK.xLENGTH
39'-6"	10 3/4" x 0.250 x 13'-4"	8 5/8" x 0.250 x 13'-4"	6 5/8" x 0.250 x 10'-1"

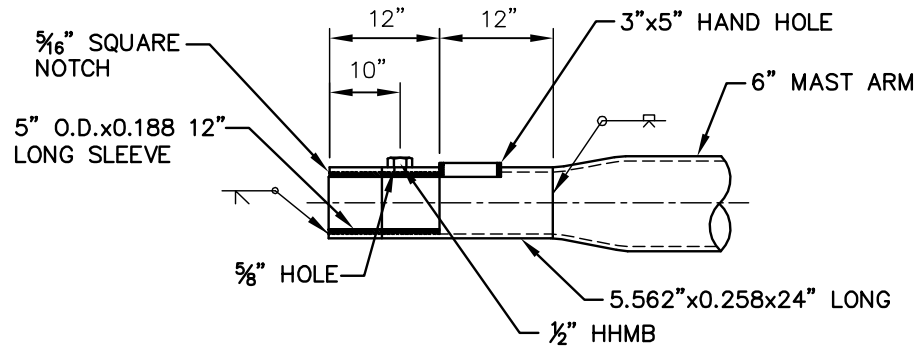
POLE TYPE	ARM E	POLE DATA			LUMINAIRE RISER	SIGNAL ARM CONNECTION DATA				
		I.D.x THK.x LENGTH	B	C	I.D.x THK.x LENGTH	I	J	K	L	M
Q108	40—55	12¾"x0.312x20'	18"	17½" SLOT	10¾"x0.188x10'	15"	15½"	1¾"x7NCx3½"	1¾"	1¾"

PAINT V54 - BLACK (4 MIL DRY)

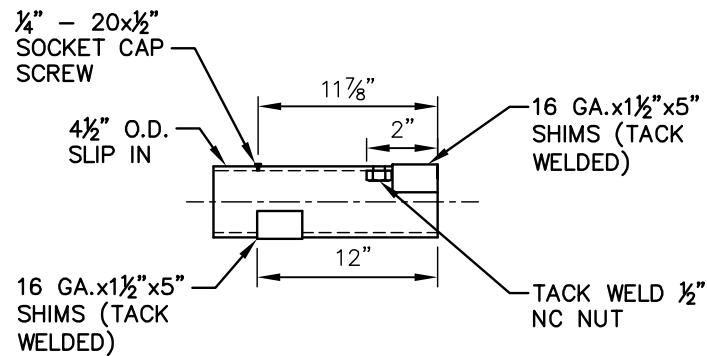
SIGNATURES
ON FILE

CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPE Q108 SIGNAL POLE
AND MAST ARM

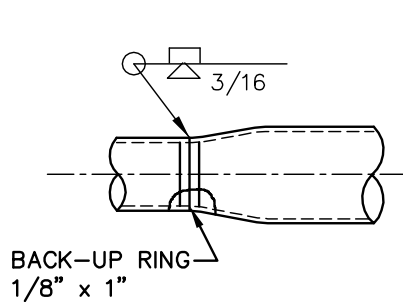
REVISION:
2/2008
T5-3
1 OF 2



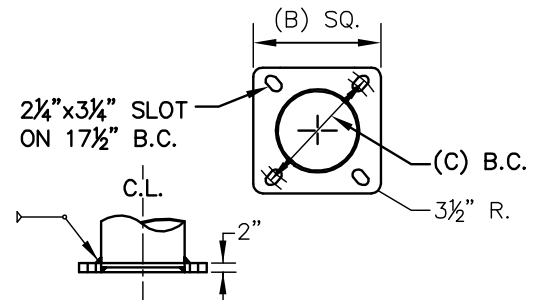
MAST ARM END DETAIL



EXTENSION END DETAIL

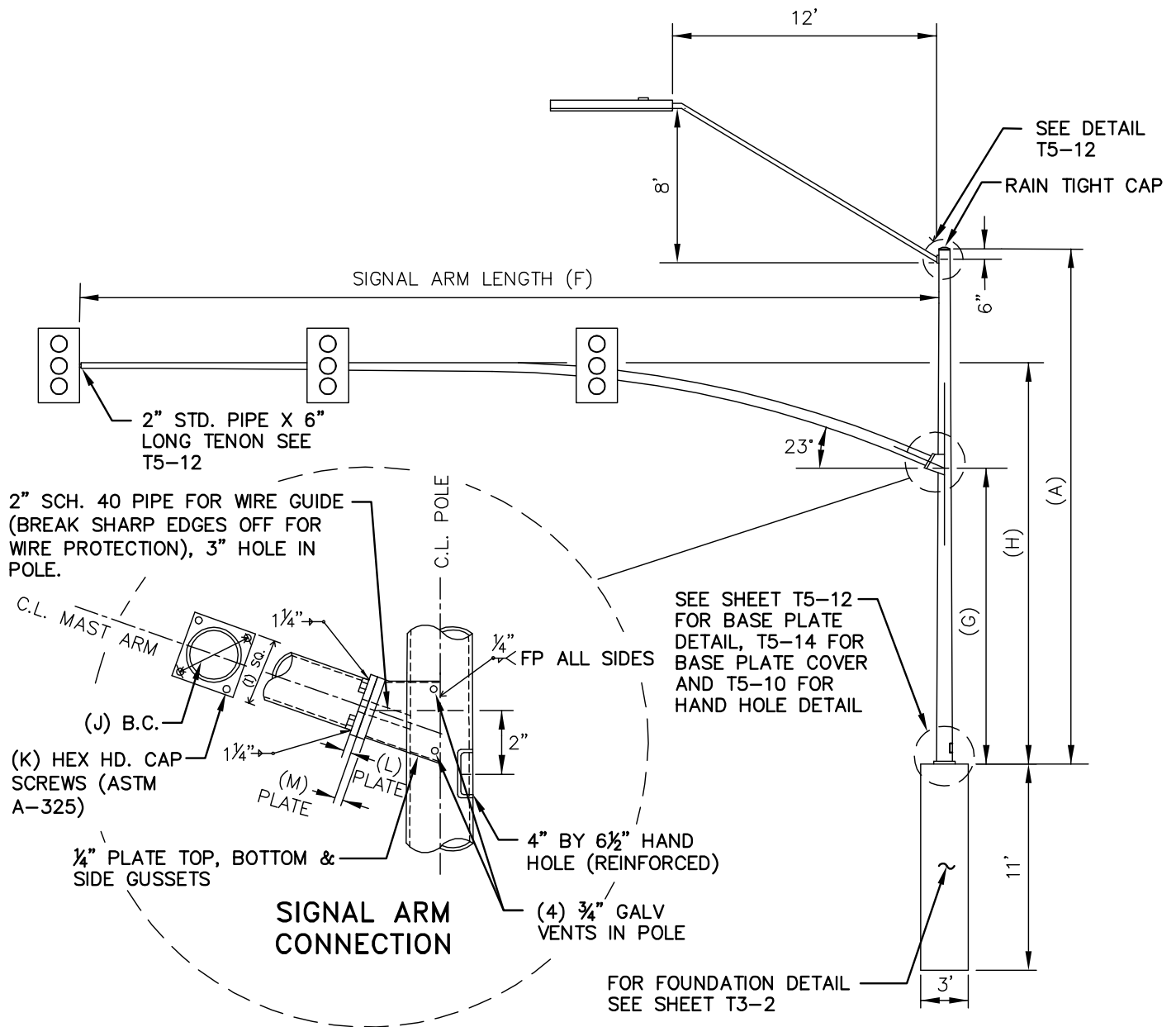


REDUCER DETAIL



BASE PLATE DETAIL

SIGNATURES
ON FILECITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPE Q108 SIGNAL POLE
AND MAST ARMREVISION:
2/2008
T5-3
2 OF 2



POLE DATA							
POLE	A	TOP O.D. X BASE O.D. X THICK	B	C	D	ANCHOR BOLTS	SIGNAL ARM (F)
Q114	25'	8.50" X 12" X 0.25" MIN.	18'	17"-18" SLOT	1 3/4"	2" X 90" X 6"	30' - 45'

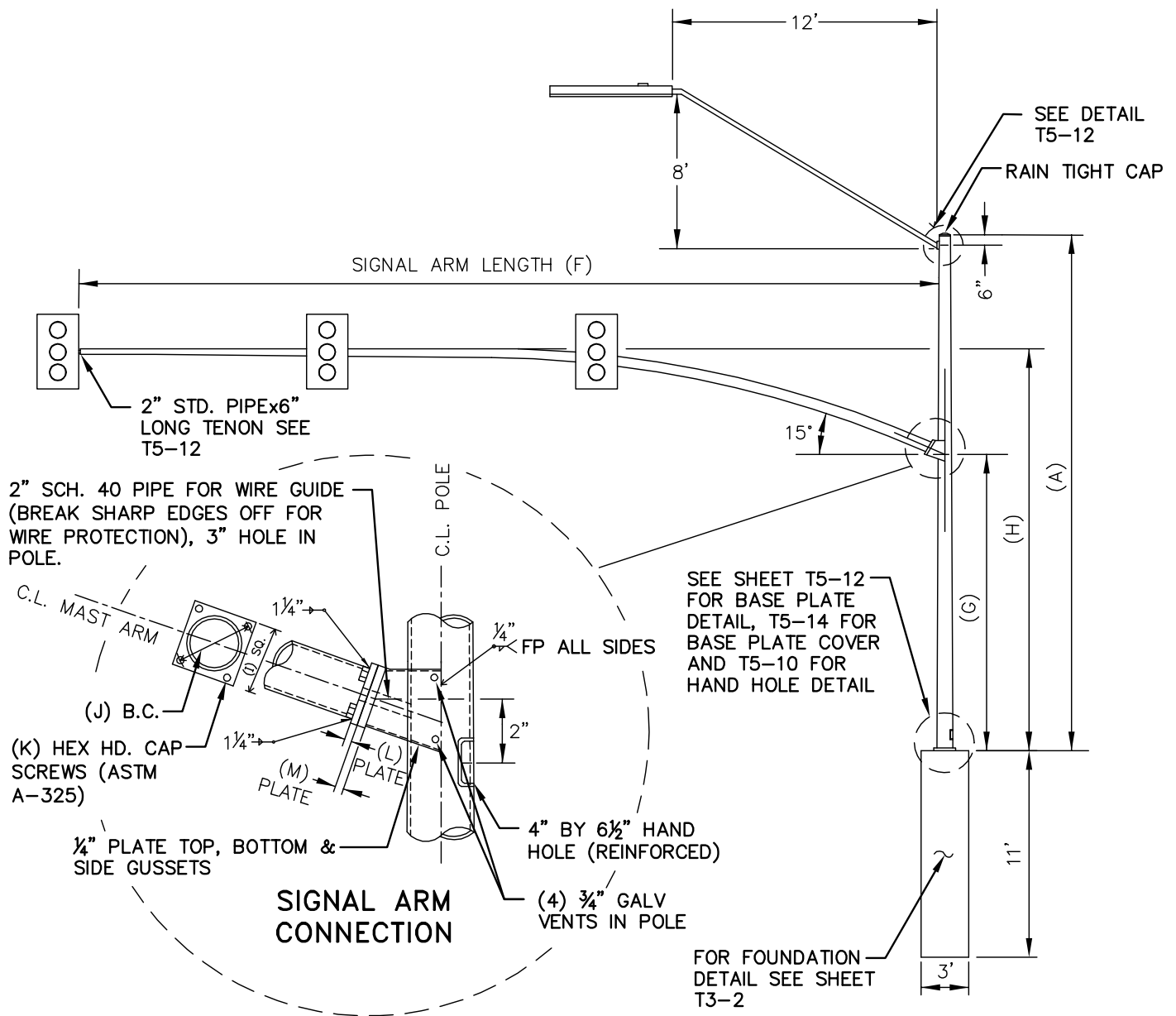
SIGNAL ARM DATA									
F	END O.D. X BASE O.D. X THICK	G	H	I	J	K	L	M	
45'-0"	3.9" X 10.0" X 0.25"	14'	21'	13"	13"	1 1/4" - 7NC X 3"	1 1/4"	1 1/2"	
40'-0"	3.9" X 9.4" X 0.25"	14'	21'	13"	13"	1 1/4" - 7NC X 3"	1 1/4"	1 1/2"	
35'-0"	3.9" X 8.7" X 0.1793"	14'	21'	13"	13"	1 1/4" - 7NC X 3"	1 1/4"	1 1/2"	
30'-0"	3.9" X 8.0" X 0.1793"	14'	21'	13"	13"	1 1/4" - 7NC X 3"	1 1/4"	1 1/2"	

**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPE Q114 SIGNAL POLE
AND MAST ARM

REVISION:
2/2008
T5-4



POLE DATA								
POLE	A	TOP O.D.xBASE O.D.xTHICK	B	C	D	ANCHOR BOLTS	SIGNAL ARM (F)	
Q116	25'	8.50"x13.00"x0.25" MIN.	18.5"	17"-18" SLOT	2"	2"x90"x6"	50'-55'	

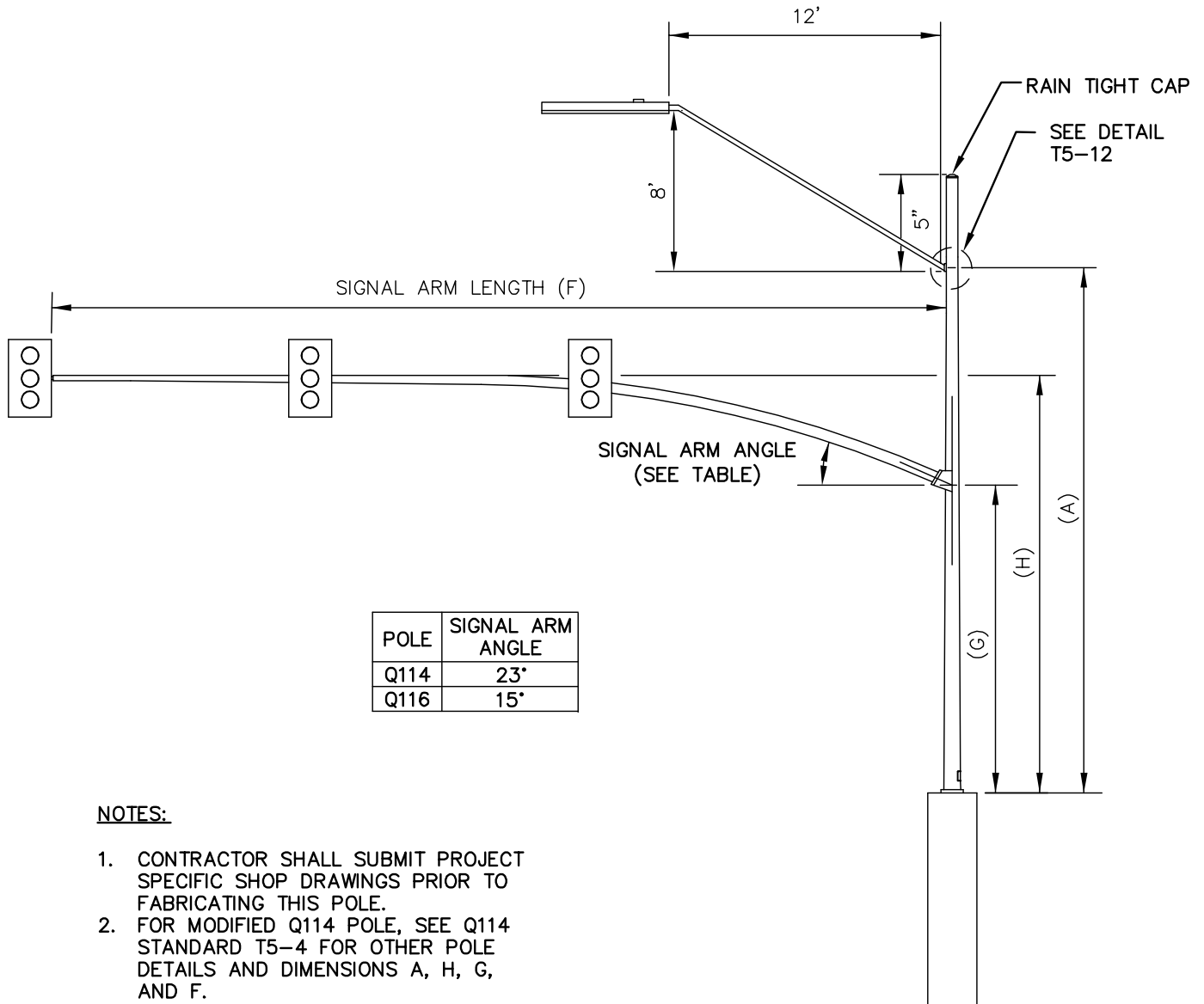
SIGNAL ARM DATA									
F	END O.D.xBASE O.D.xTHICK	G	H	I	J	K	L	M	
55'-0"	3.90"x10.14"x0.12"x0.25"	14'	21'	15"	15"	1 1/4" - 7NC x 3"	1 1/4"	1 1/2"	
50'-0"	3.90"x10.14"x0.12"x0.25"	14'	21'	15"	15"	1 1/4" - 7NC x 3"	1 1/4"	1 1/2"	

SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TYPE Q116 SIGNAL POLE
AND MAST ARM

REVISION:
2/2008
T5-5

**NOTES:**

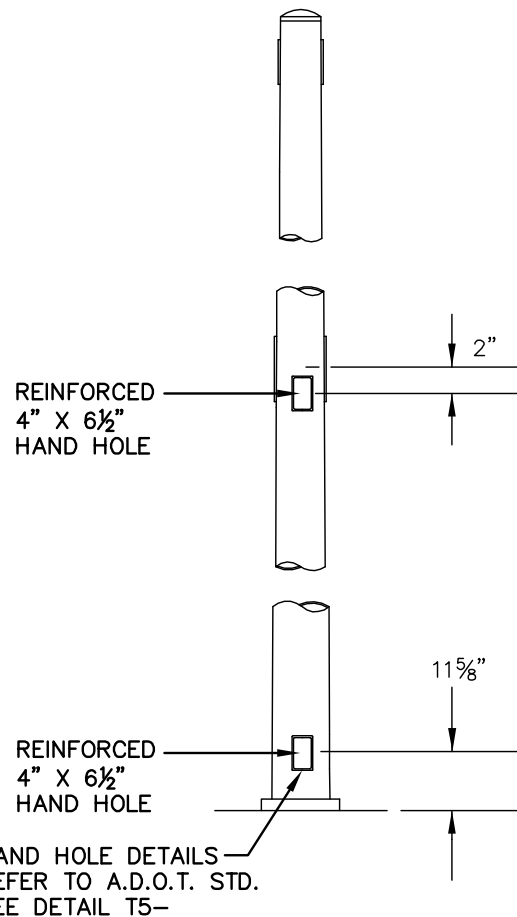
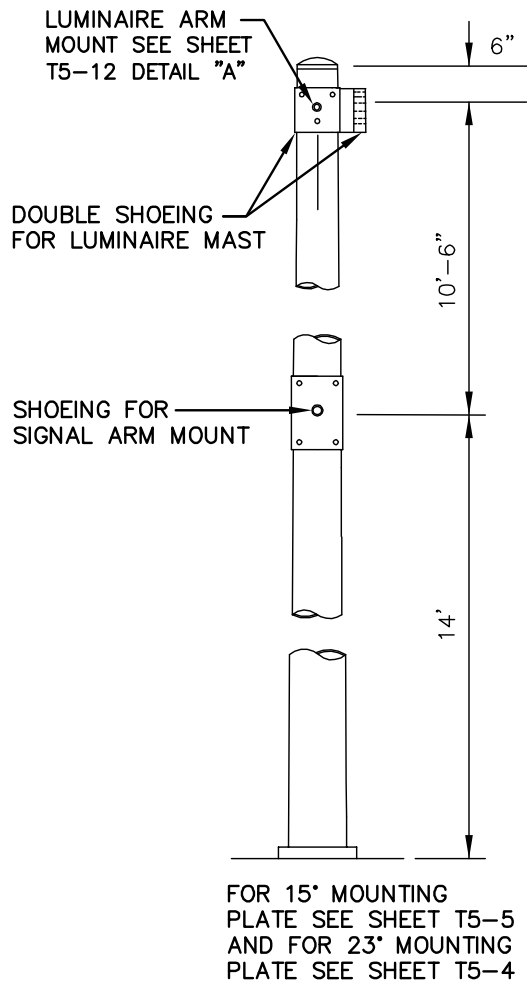
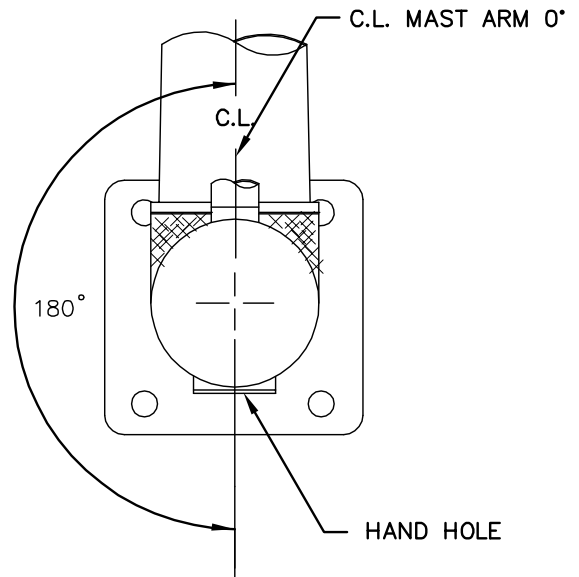
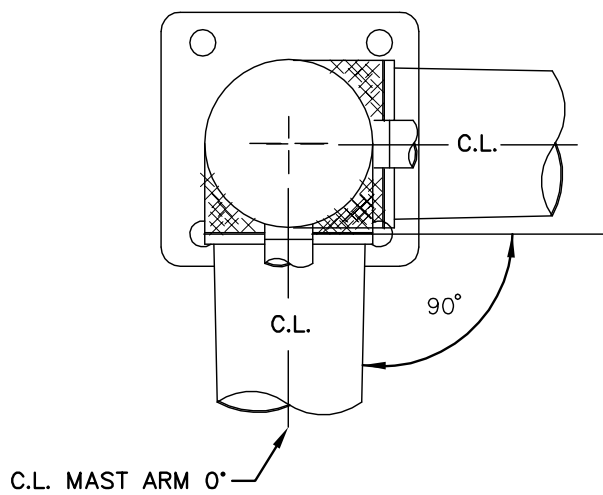
1. CONTRACTOR SHALL SUBMIT PROJECT SPECIFIC SHOP DRAWINGS PRIOR TO FABRICATING THIS POLE.
2. FOR MODIFIED Q114 POLE, SEE Q114 STANDARD T5-4 FOR OTHER POLE DETAILS AND DIMENSIONS A, H, G, AND F.
3. FOR MODIFIED Q116 POLE, SEE Q116 STANDARD T5-5 FOR OTHER POLE DETAILS AND DIMENSIONS A, H, G, AND F.
4. REFERENCE STANDARD T3-2 FOR FOUNDATION DETAIL.

**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
MODIFIED TYPE Q114 OR Q116 SIGNAL
POLE FOR CCTV

REVISION:
2/2008
T5-6



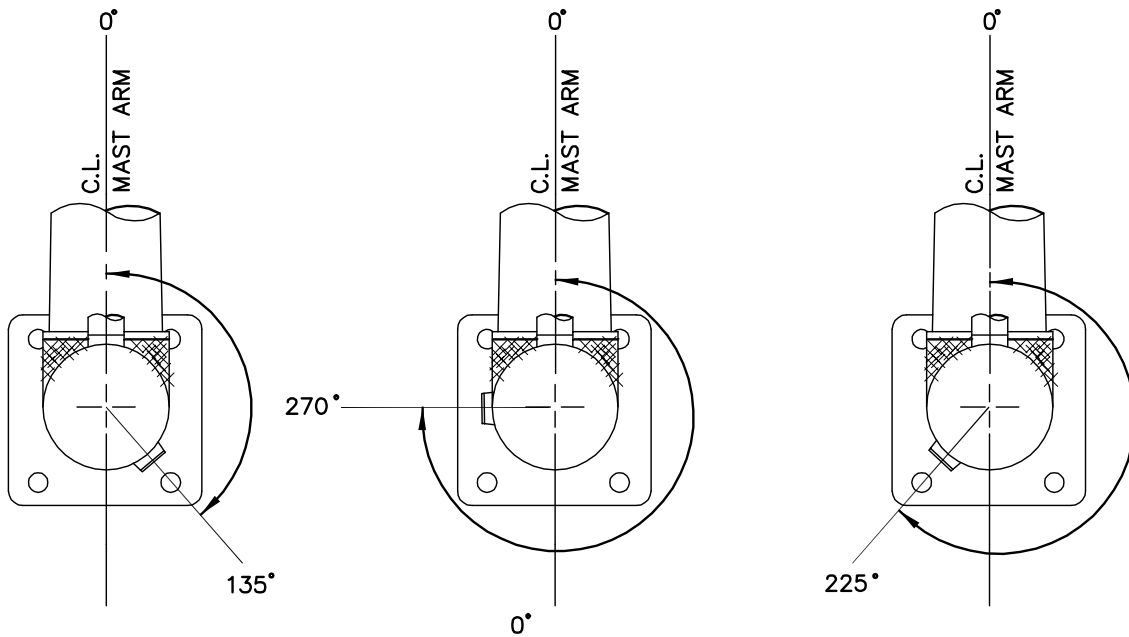
SIGNATURES
ON FILE



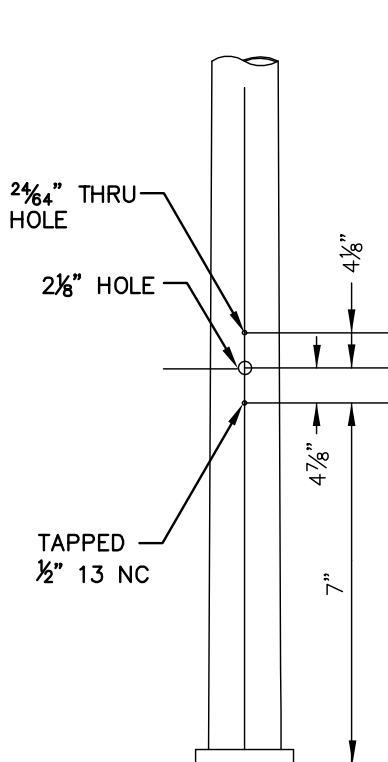
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
SIGNAL POLE EXTREMITY ORIENTATION

REVISION:
2/2008

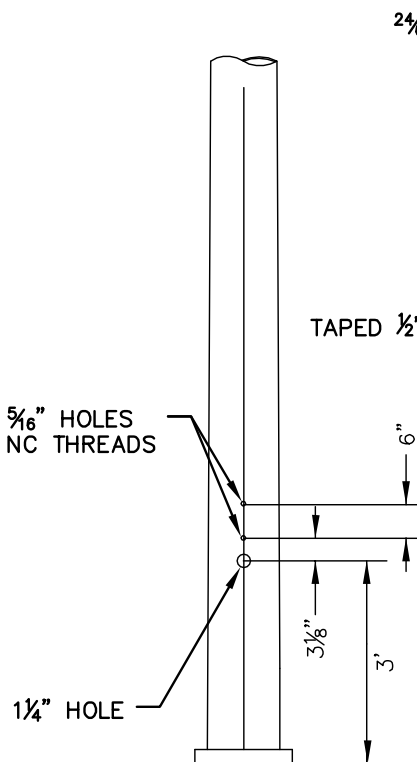
T5-7



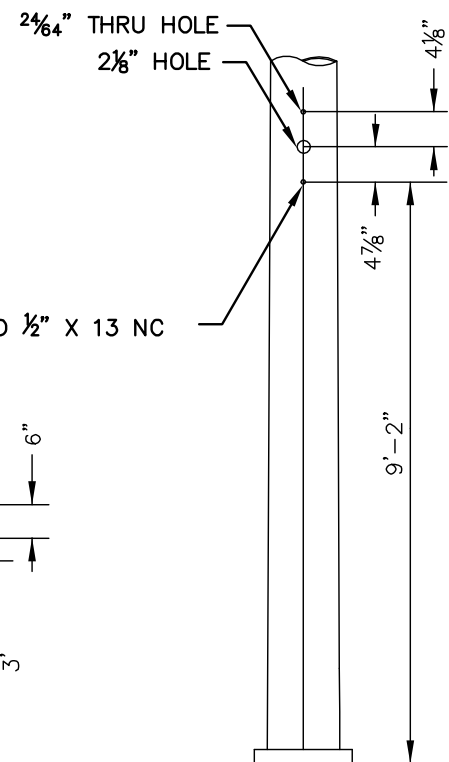
NOTE:
ALL HOLES TO BE FIELD DRILLED.



**TYPE VII MOUNT FOR
PEDESTRIAN HEAD
MOUNT**



**TYPE II PEDESTRIAN
PUSH BUTTON MOUNT**



**TYPE V MOUNT FOR
TYPE F AND Q SIGNAL
HEADS**

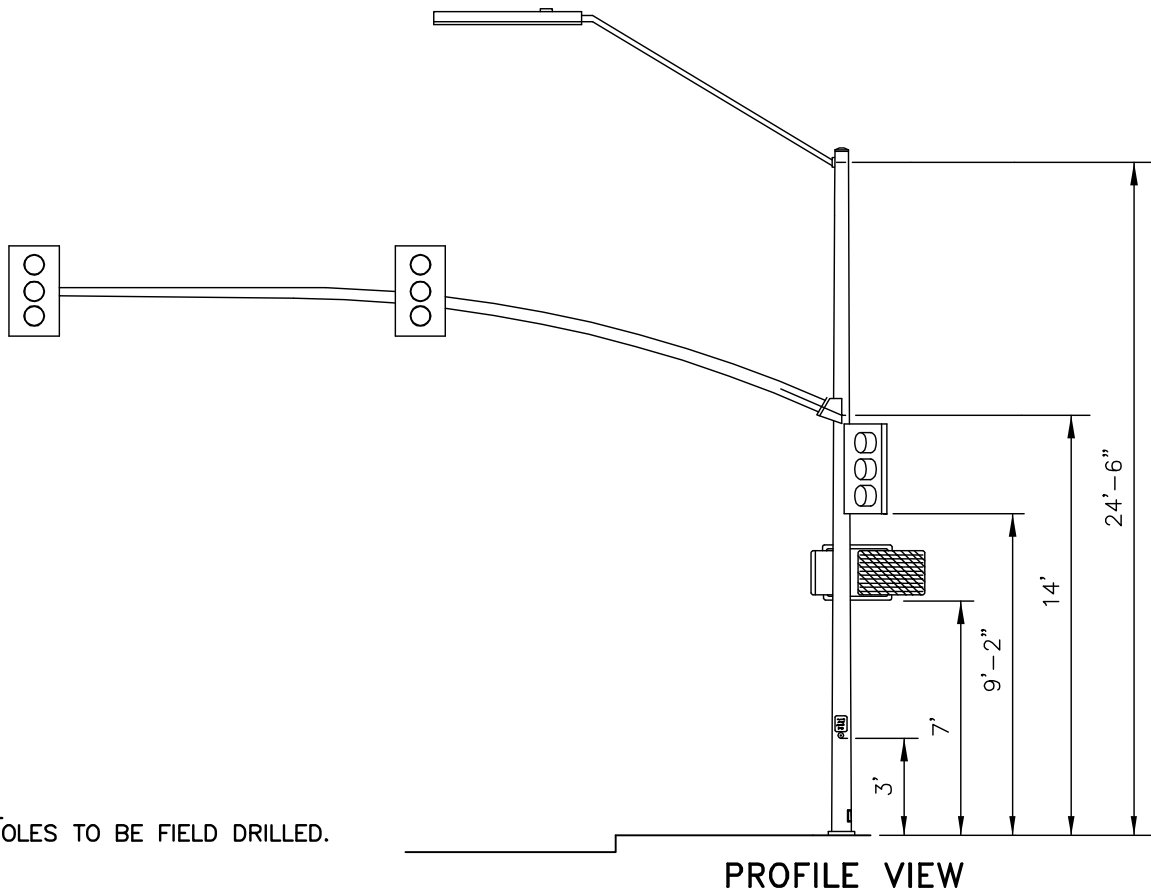
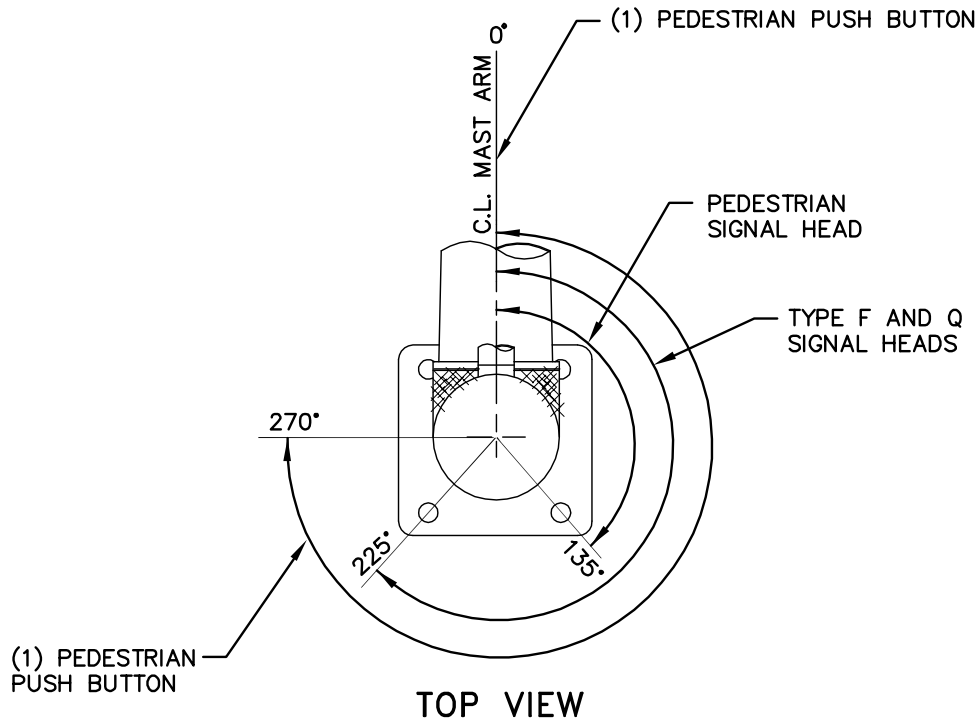
**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
SIGNAL POLE DRILLING DETAILS

REVISION:
2/2008

T5-8



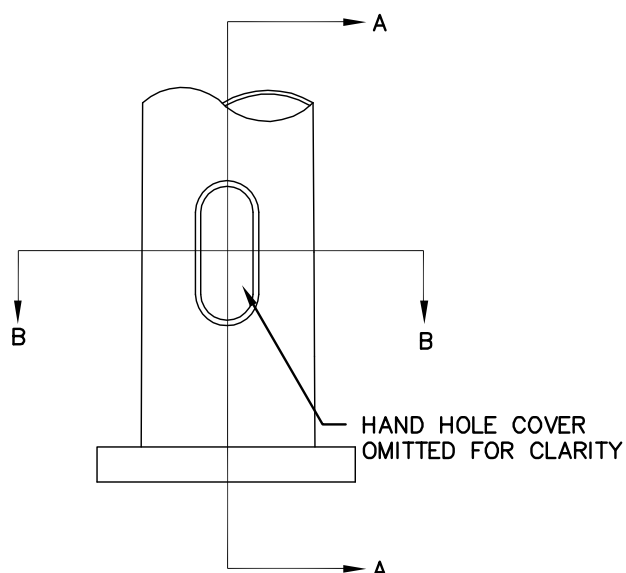
NOTE:
ALL HOLES TO BE FIELD DRILLED.

**SIGNATURES
ON FILE**

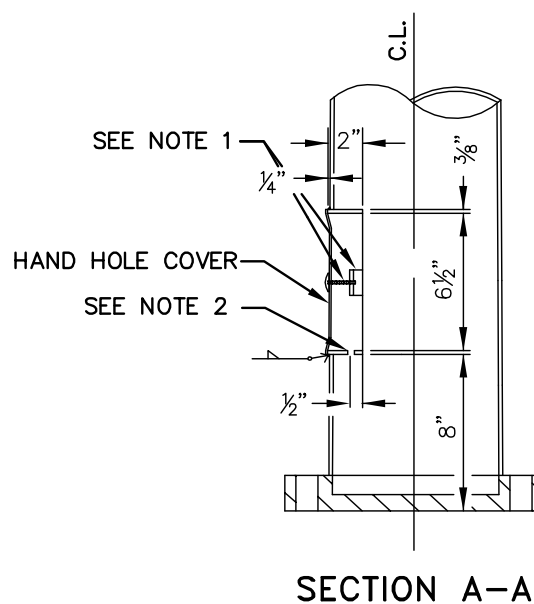
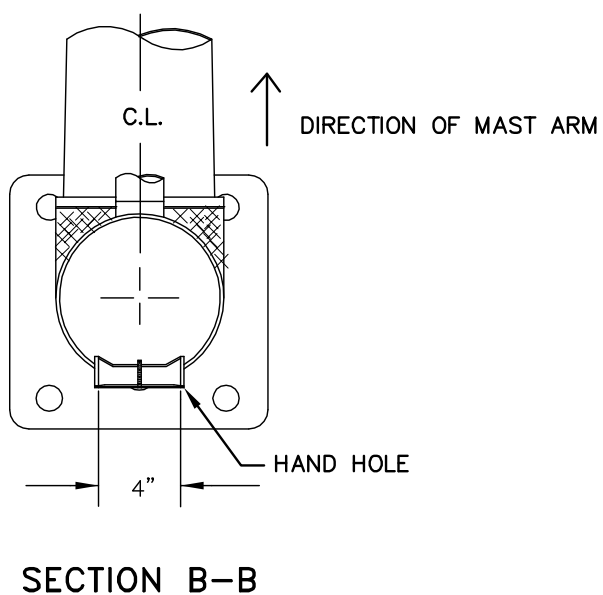


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
SIGNAL EQUIPMENT ORIENTATION

REVISION:
2/2008
T5-9

**NOTES:**

1. HAND HOLE COVER SHALL BE SECURED BY A BRASS MACHINE SCREW AND HOLDING CLEAT.
2. POLE GROUND SHALL BE $\frac{5}{16}$ " DIA. NC TAPPED HOLE LOCATED AS SHOWN.
3. HAND HOLE SHALL BE ORIENTATED SO THAT IT IS 180° OPPOSITE MAST ARM.



**SIGNATURES
ON FILE**



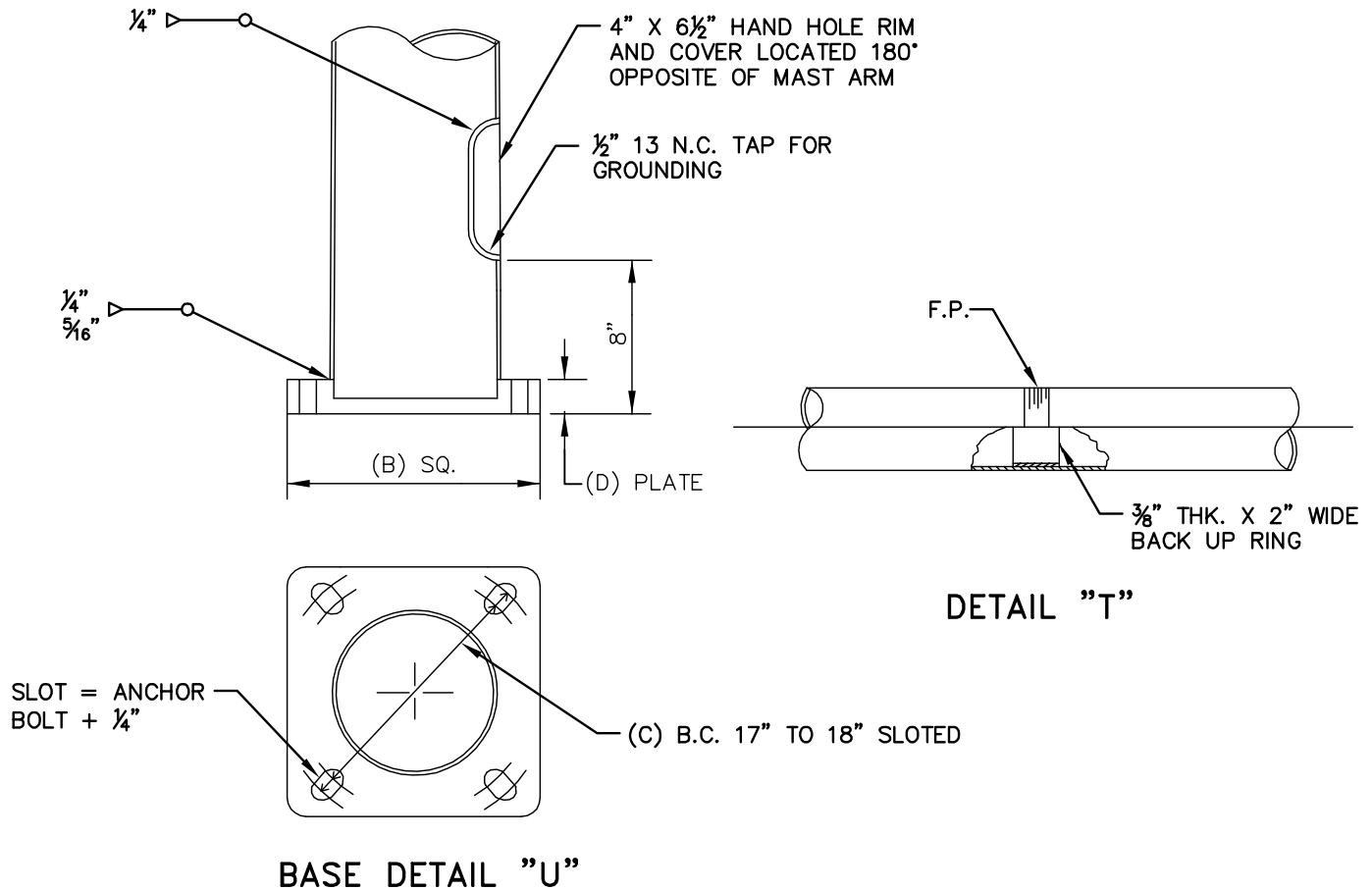
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

HAND HOLE DETAIL

REVISION:

2/2008

T5-10

**NOTES:**

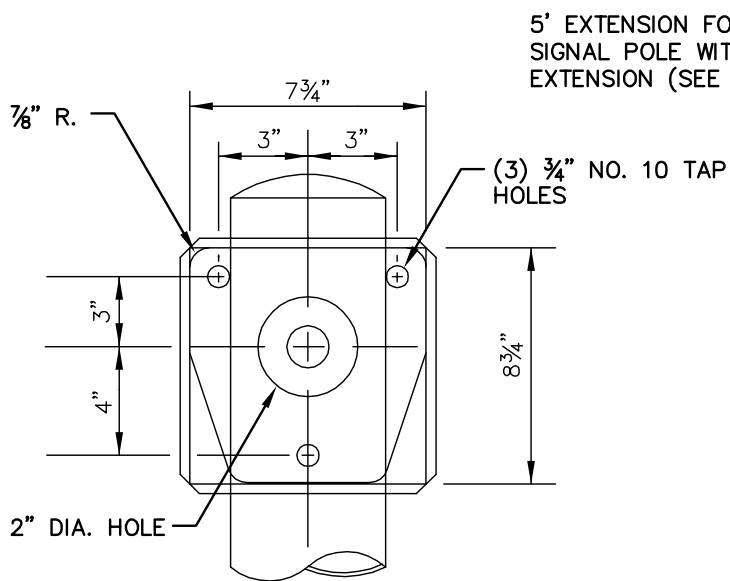
1. THE END OF THE MAST ARM SHALL BE 90° TO THE POLE AXIS.
2. FOR LUMINAIRE MAST ARM DATA SEE SHEET T5-12.
3. TRANSVERSE OR CIRCUMFER ENTRAL WELDS SHALL BE ACCORDING TO DETAIL "T".
4. SIGNAL ARM CONNECTION GUSSETS SHALL BE WELDED TO THE POLE. PROVIDE TWO WEEP HOLES AT EACH EDGE IN THE BOTTOM GUSSET NEAR THE POLE.
5. THE TOP TEN FEET OF THE COMBINATION SIGNAL POLE MAY BE 10 OR 11 GAUGE GALVANIZED STEEL PER A.S.T.M. CURRENT SPECIFICATIONS.
THE GAUGE AND DIAMETER, IN INCHES, OF EACH POLE AND MAST ARM SHALL BE PERMANENTLY AFFIXED TO THE LARGE END OF EACH BY A METAL TAG OR STAMPED INTO THE METAL. THE POLE TYPE SHALL ALSO BE INCLUDED:
EXAMPLE: Q114 - 25' POLE
Q114 - 40' ARM
6. POLES SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH A.S.T.M. CURRENT SPECIFICATIONS.

**SIGNATURES
ON FILE**



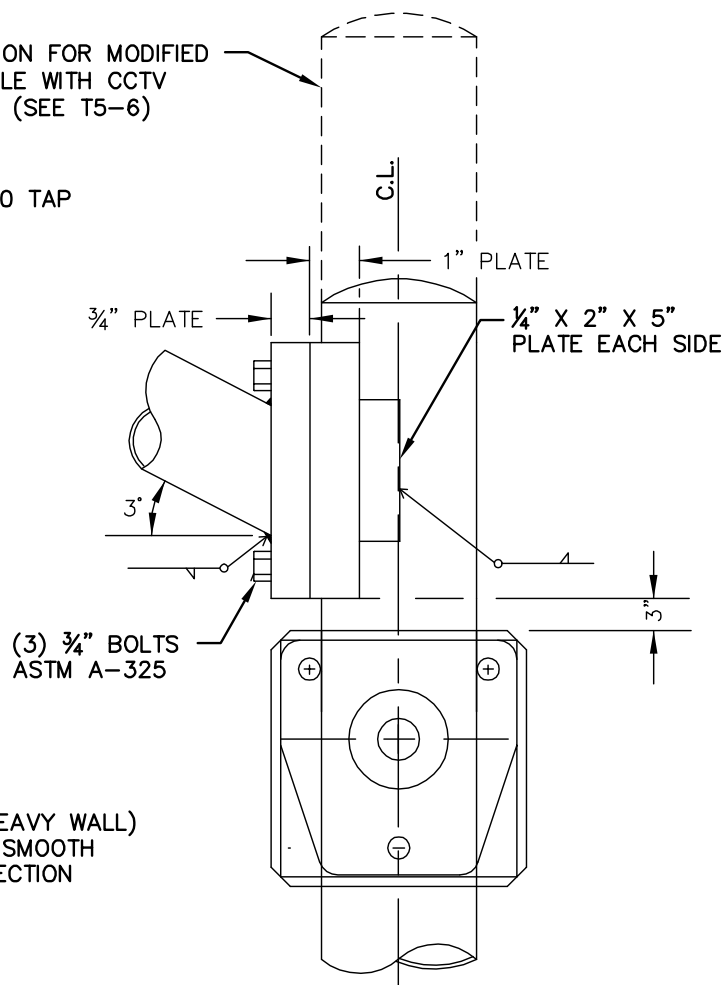
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
SIGNAL POLE BASE/SIGNAL ARM
EXTENSION WELD

REVISION:
2/2008
T5-11

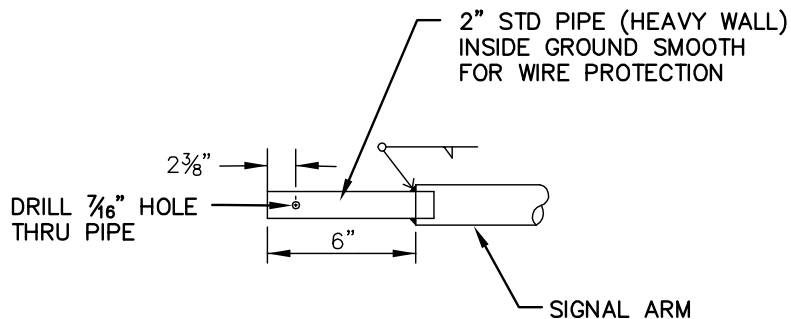


NOTE:
SEE STREET LIGHTING STANDARDS FOR ARM RISE AND OTHER INFORMATION.

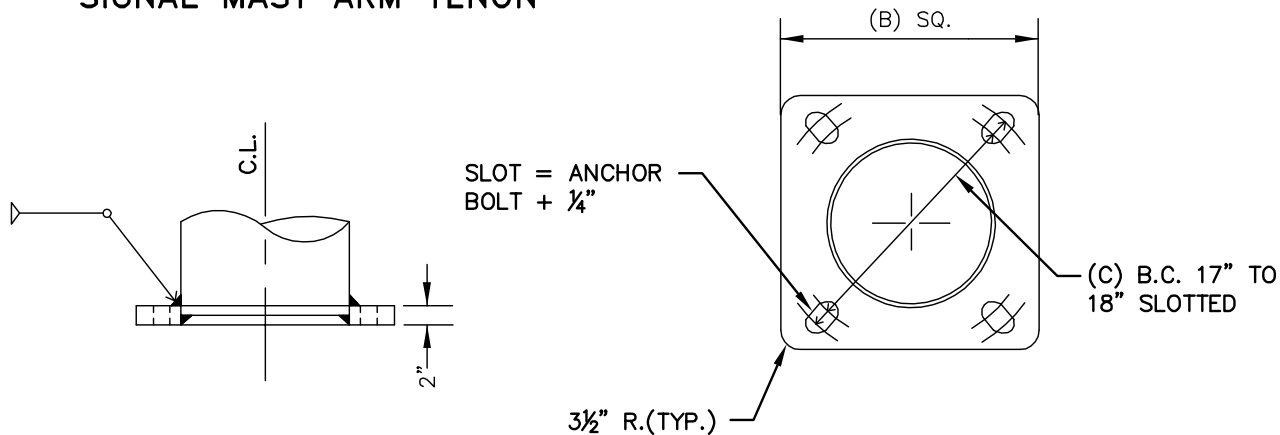
LUMINAIRE SHOEING DETAIL



DOUBLE LUMINAIRE SHOEING



SIGNAL MAST ARM TENON



BASE PLATE DETAIL

**SIGNATURES
ON FILE**

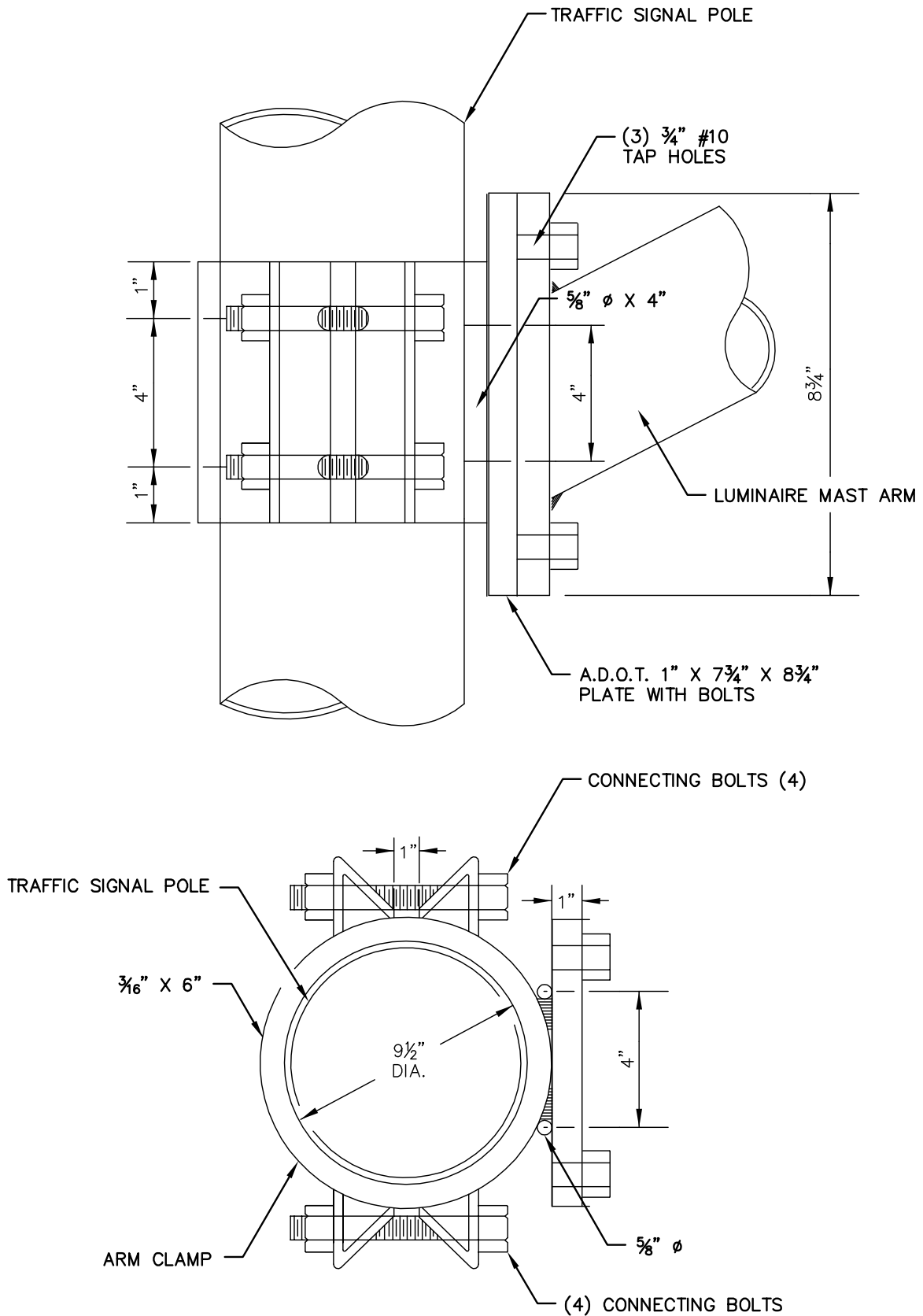


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
SIGNAL ARM TENON/SIGNAL POLE
BASE PLATE/LUMINAIRE SHOEING

REVISION:

2/2008

T5-12

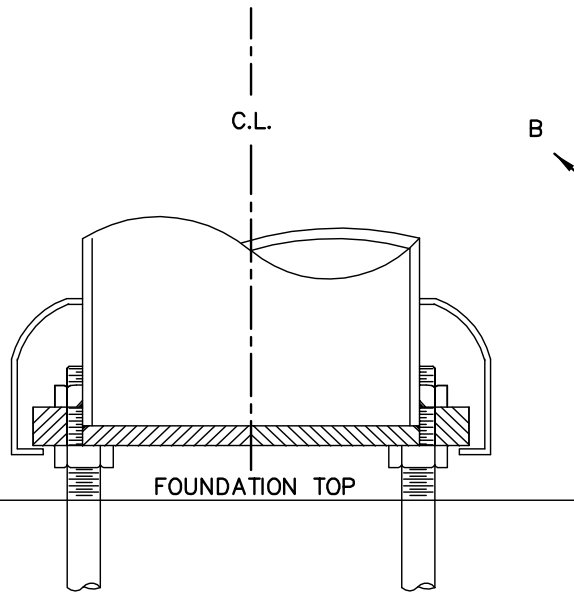
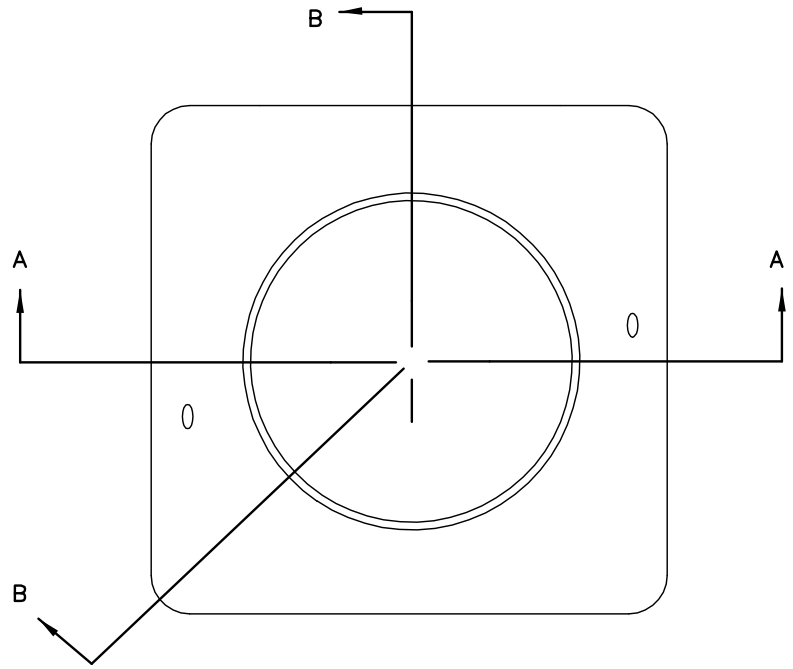


SIGNATURES
ON FILE

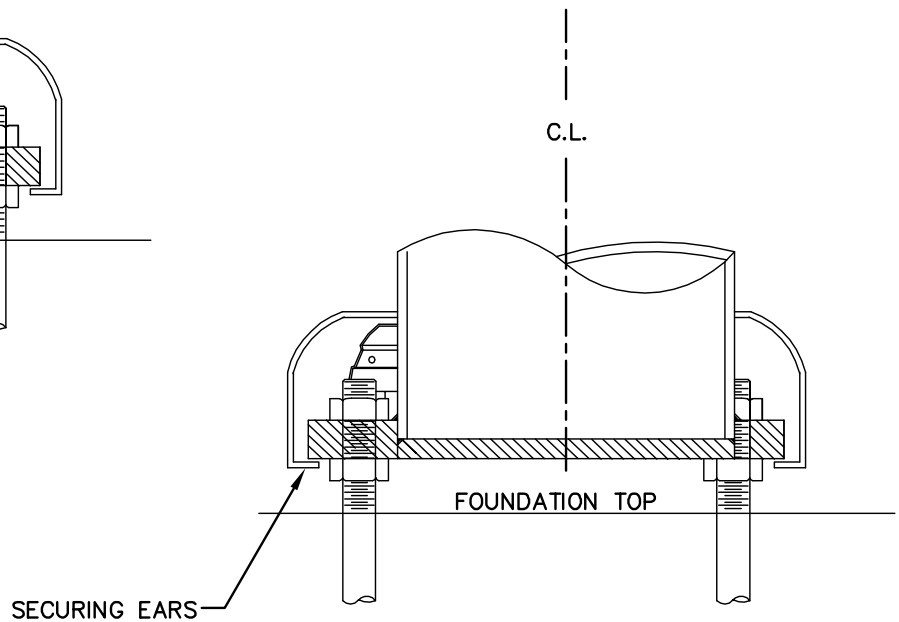


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
ROTATABLE MAST ARM CLAMP

REVISION:
2/2008
T5-13



SECTION A-A



SECTION B-B

POLE SHAFT DIAMETER ($\frac{1}{2}$ " INCREMENTS)	MAXIMUM PLATE SQUARE (INCHES)	MAXIMUM COVER HEIGHT (INCHES)
6 $\frac{1}{2}$ " - 9 $\frac{1}{2}$ "	12 $\frac{3}{4}$ "	7"
10" - 11 $\frac{1}{2}$ "	14 $\frac{3}{4}$ "	7"
12" - 12 $\frac{1}{2}$ "	18"	7"

SIGNATURES
ON FILE

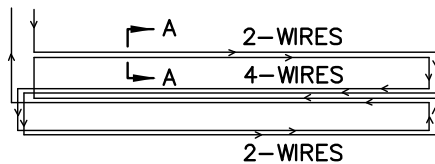


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

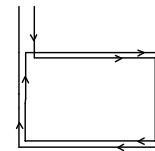
TWO PIECE BASE COVER

REVISION:
2/2008

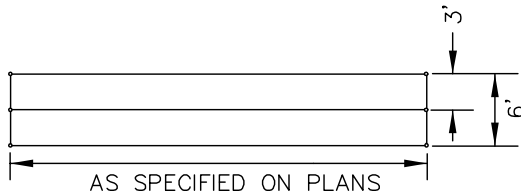
T5-14



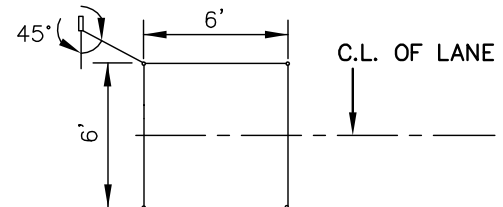
WIRING DIAGRAM FOR QUADRUPOLE
DETECTOR (2 TURNS)



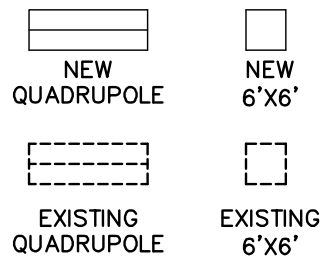
WIRING DIAGRAM FOR
6'X6' DETECTOR



SAW CUT PATTERN FOR
QUADRUPOLE DETECTOR



SAW CUT PATTERN FOR
6'X6' DETECTOR



PLAN SYMBOLS

NOTES:

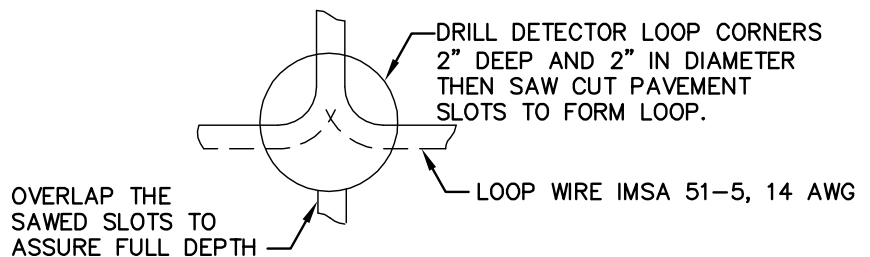
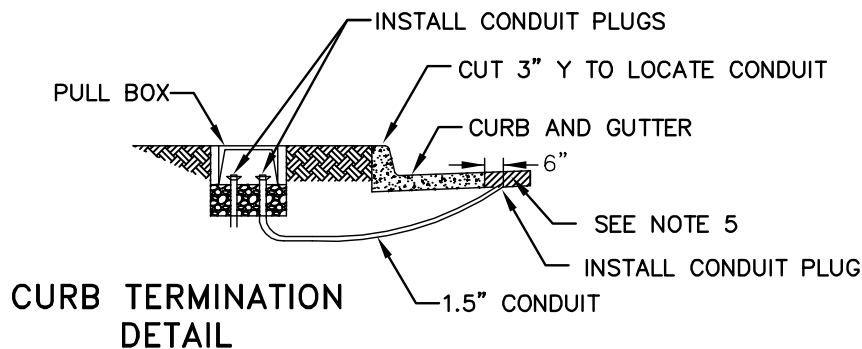
1. ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE TRAFFIC SIGNAL SUPERVISOR.
2. BLOW OUT ALL SAW CUTS BEFORE INSTALLING THE LOOP WIRE.
3. SAW CUTS SHALL BE FILLED WITH "CRAFCO LOOP SEALER". SURFACE OF SEALER SHALL BE KEPT BELOW WEARING SURFACE OF ROADWAY.
4. ALL DETECTOR LOOPS SHALL BE GIVEN A CONTINUITY AND INSULATION TEST BEFORE AND AFTER PLACING THE SEALER IN THE SAW CUTS. MINIMUM READING TO GROUND SHALL BE AT LEAST 100 MEG-OHMS.
5. USE SAME MATERIAL (OR APPROVED EQUAL) FOR PATCHING EXISTING PAVEMENT. PATCH TO AT LEAST $\frac{1}{4}$ " GREATER THICKNESS THAN EXISTING PAVEMENT
6. LOOP DETECTORS SHALL BE LOCATED IN CENTER OF TRAVELED LANE AND SHALL BE APPROVED BY THE TRAFFIC SIGNAL SUPERVISOR.
7. NUMBER OF TURNS NEED TO BE APPROVED BY TRAFFIC SIGNAL SUPERVISOR.
8. LEAD IN LOOP CONNECTION SHALL BE SOLDERED WIRE NUTTED, TAPE WRAPPED, AND SCOTCH KOTED.

SIGNATURES
ON FILE

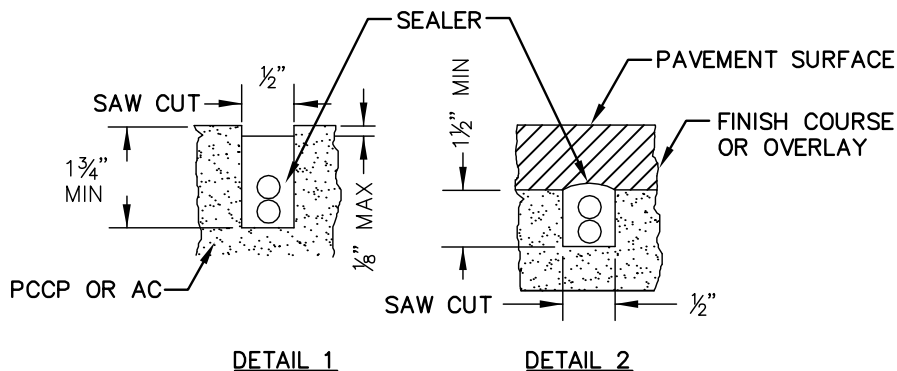


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
LOOP DETECTOR INSTALLATION

REVISION:
2/2008
T6-1
1 OF 2



DRILLING DETAIL

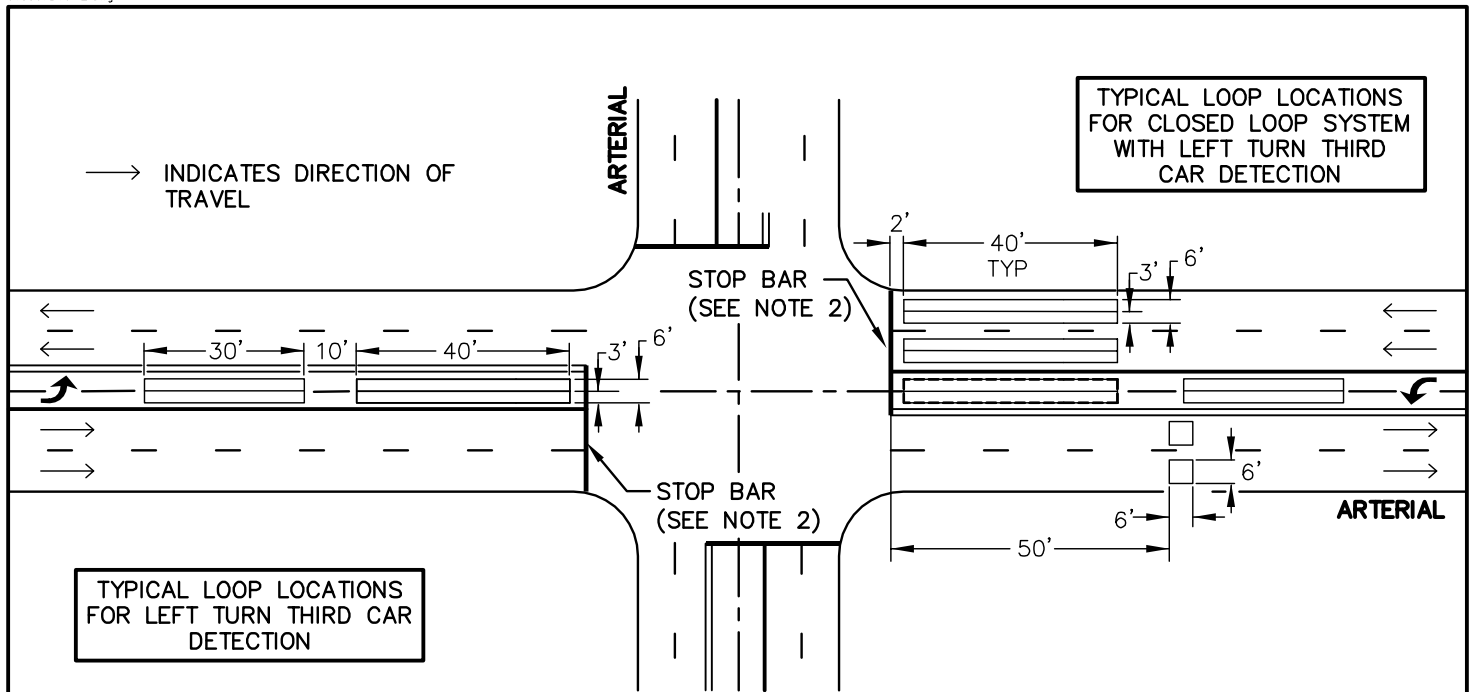
SECTION A-A
LOOP INSTALLATIONSLOOP INDUCTANCE REQUIREMENTS:

THE INDUCTANCE VALUE OF A LOOP SHALL BE AT LEAST 4 TIMES THE INDUCTANCE VALUE OF THE LEAD-IN CABLE. TO DETERMINE THE NUMBER OF TURNS OF WIRE IN A LOOP USE THE FOLLOWING AS A RULE OF THUMB:

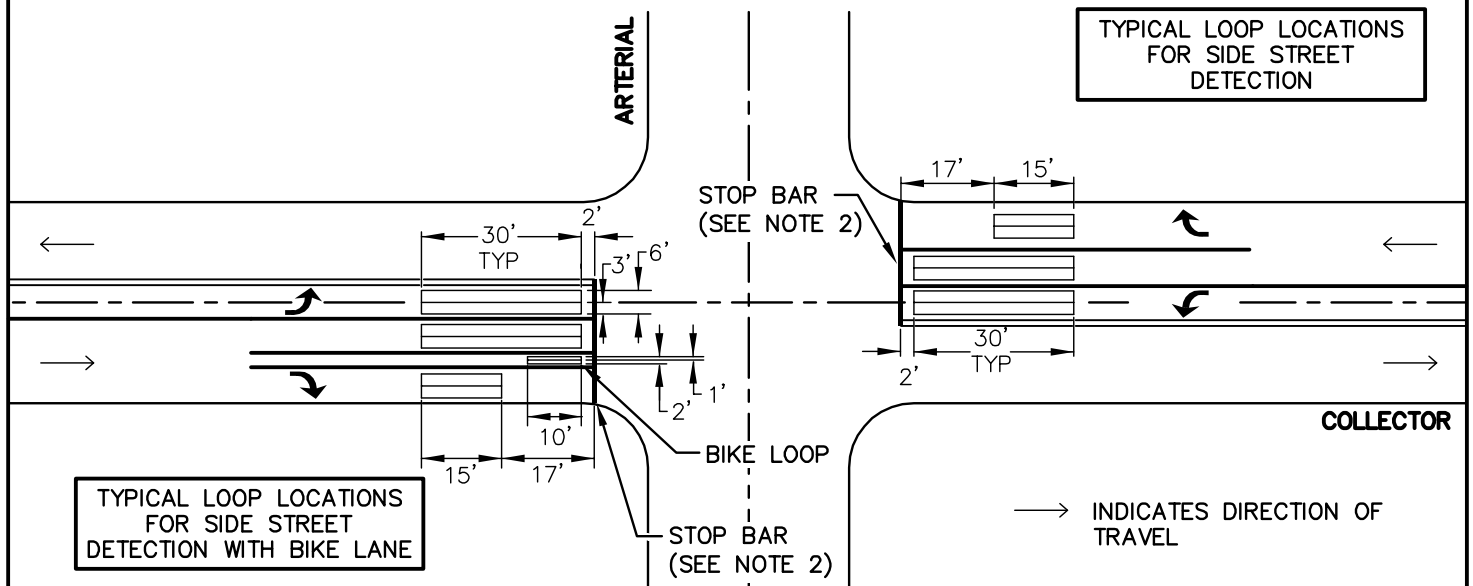
LEAD-IN CABLE HAS APPROXIMATELY .15uh PER FOOT, AND LOOP INDUCTANCE = $(P/4) \times (N^2 + N)$ WHERE:
 P=PERIMETER OF LOOP.
 N=NUMBER OF TURNS IN WHOLE NUMBERS.

FIND THE NUMBER OF FEET OF LEAD-IN NEEDED TO GET TO THE CONTROLLER CABINET AND MULTIPLY THAT TIMES .15uh, NEXT FIND THE LOOP INDUCTANCE OF THE LOOP USING A MINIMUM OF TWO TURNS. IF THE LOOP INDUCTANCE IS NOT FOUR TIMES OR MORE GREATER THAN THE LEAD IN INDUCTANCE, ADD THE NEEDED EXTRA TURNS OF WIRE TO THE LOOP TO ACHIEVE THIS 4 TO 1 RATIO. EACH LOOP SHALL HAVE A MINIMUM OF 2 TURNS OF WIRE. SEE NOTE 7 (PREVIOUS SHEET).

SIGNATURES
ON FILECITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
LOOP DETECTOR INSTALLATIONREVISION:
6/2007
T6-1
2 OF 2



TYPICAL ARTERIAL LOOP LOCATIONS

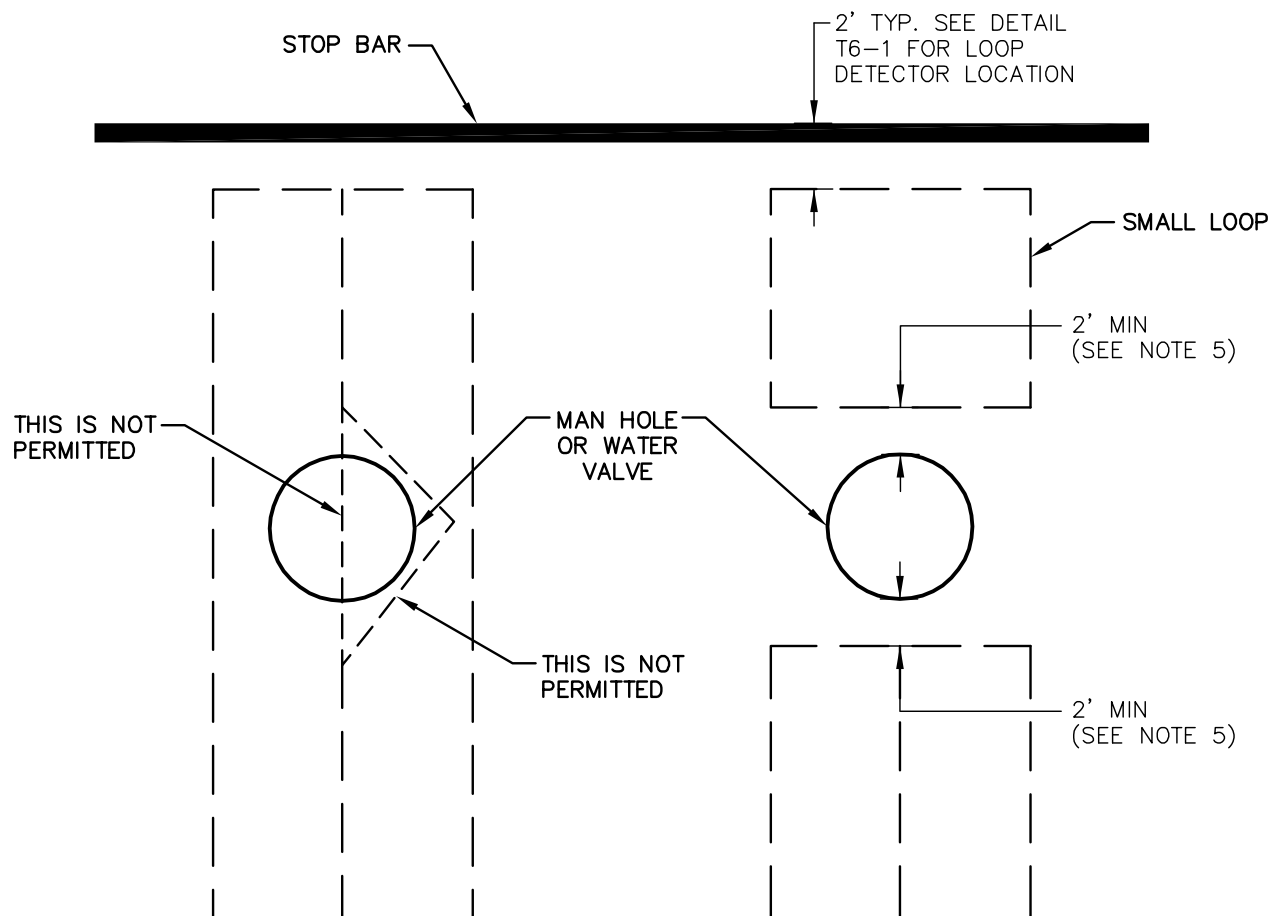


TYPICAL COLLECTOR LOOP LOCATIONS

NOTES:

1. ALL LOOPS ARE TO BE CENTERED IN THE MIDDLE OF THE STRIPED VEHICLE LANE.
2. WHERE NO STOP BAR OR STRIPING EXISTS, CONTRACTOR TO CALL THE TRAFFIC SIGNAL SUPERVISOR AT (623) 930-2762 TO HAVE STOP BAR AND STRIPING MARKED BEFORE LOOP INSTALLATION.

SIGNATURES
ON FILECITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
LOOP DETECTOR INSTALLATION
LOCATIONREVISION:
6/2007
T6-2

**NOTES:**

1. CONTRACTOR SHALL MAINTAIN ADEQUATE CLEARANCE BETWEEN LOOPS AND ANY MAN HOLE COVERS OR WATER VALVE LIDS IN THE STREET. ALL LOOP WIRES SHALL BE OUTSIDE OF THE CONCRETE PAD COVERS.
2. IF THERE IS LESS THAN 4 FEET BETWEEN COVER LOCATION AND THE STOP BAR, NO LOOP SHALL BE INSTALLED.
3. IF THERE IS MORE THAN 7 FEET BETWEEN COVER LOCATION AND THE STOP BAR, A QUADRUPOLE LOOP SHALL BE INSTALLED.
4. SEE DETAIL T6-1 FOR ADDITIONAL LOOP INSTALLATION INFORMATION.
5. CONTRACTOR SHALL MAINTAIN A MINIMUM OF 2 FEET OF CLEARANCE BETWEEN LOOP DETECTORS AND MANHOLES/WATER VALVES.

**SIGNATURES
ON FILE**



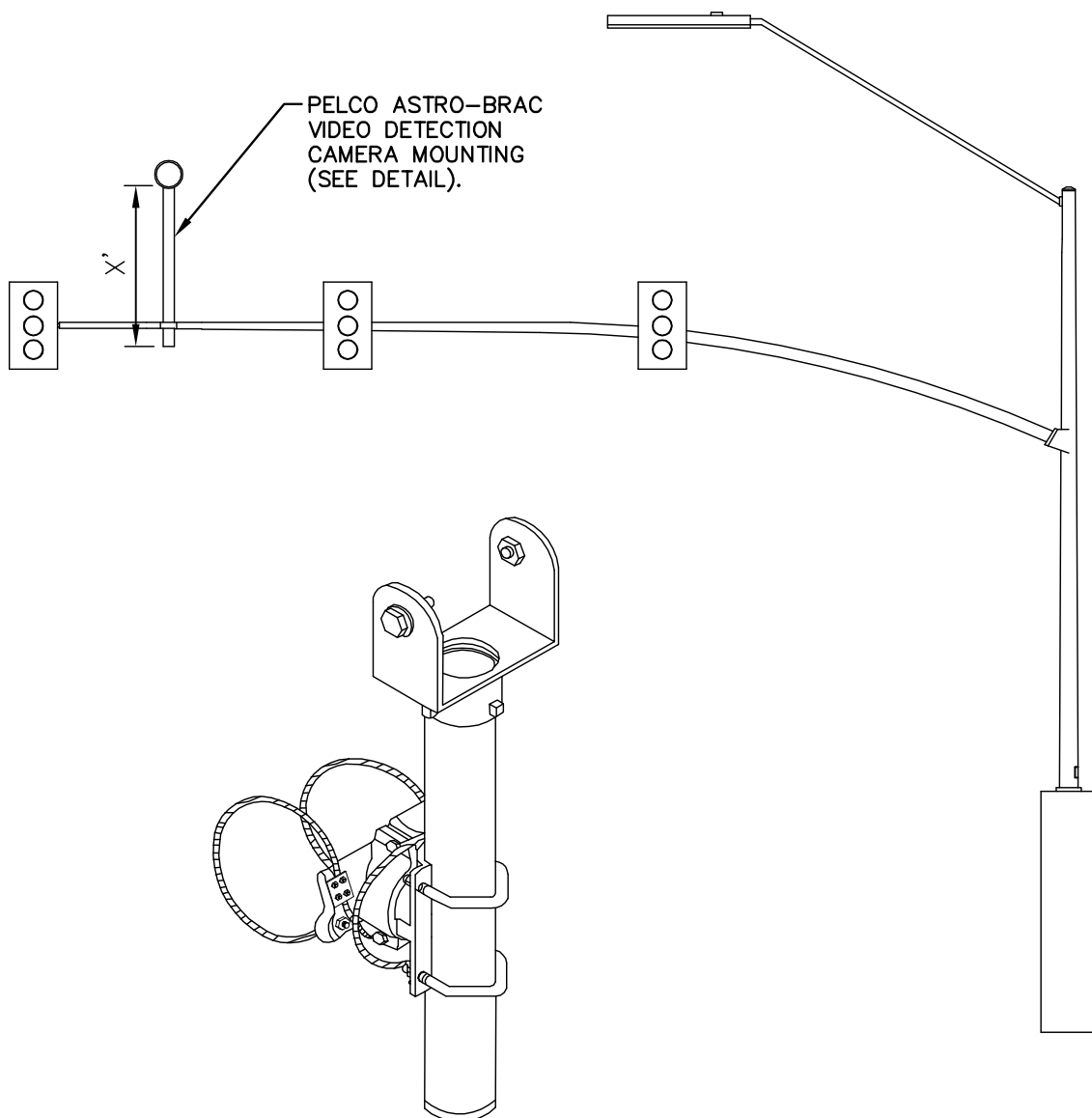
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
LOOP DETECTOR INSTALLATION
WITH MANHOLE CONFLICT

REVISION:

6/2007

T6-3

NOT TO SCALE

**NOTE:**

1. ALL VIDEO DETECTION CAMERA MOUNTINGS SHALL BE PELCO ASTRO-BRAC, 1-PIECE CABLE MOUNT (PART NO. AS-0175) OR APPROVED EQUAL.

AVAILABLE TUBE LENGTHS

X' , TUBE LENGTH:
23", 37", 46", OR 74"

**SIGNATURES
ON FILE**

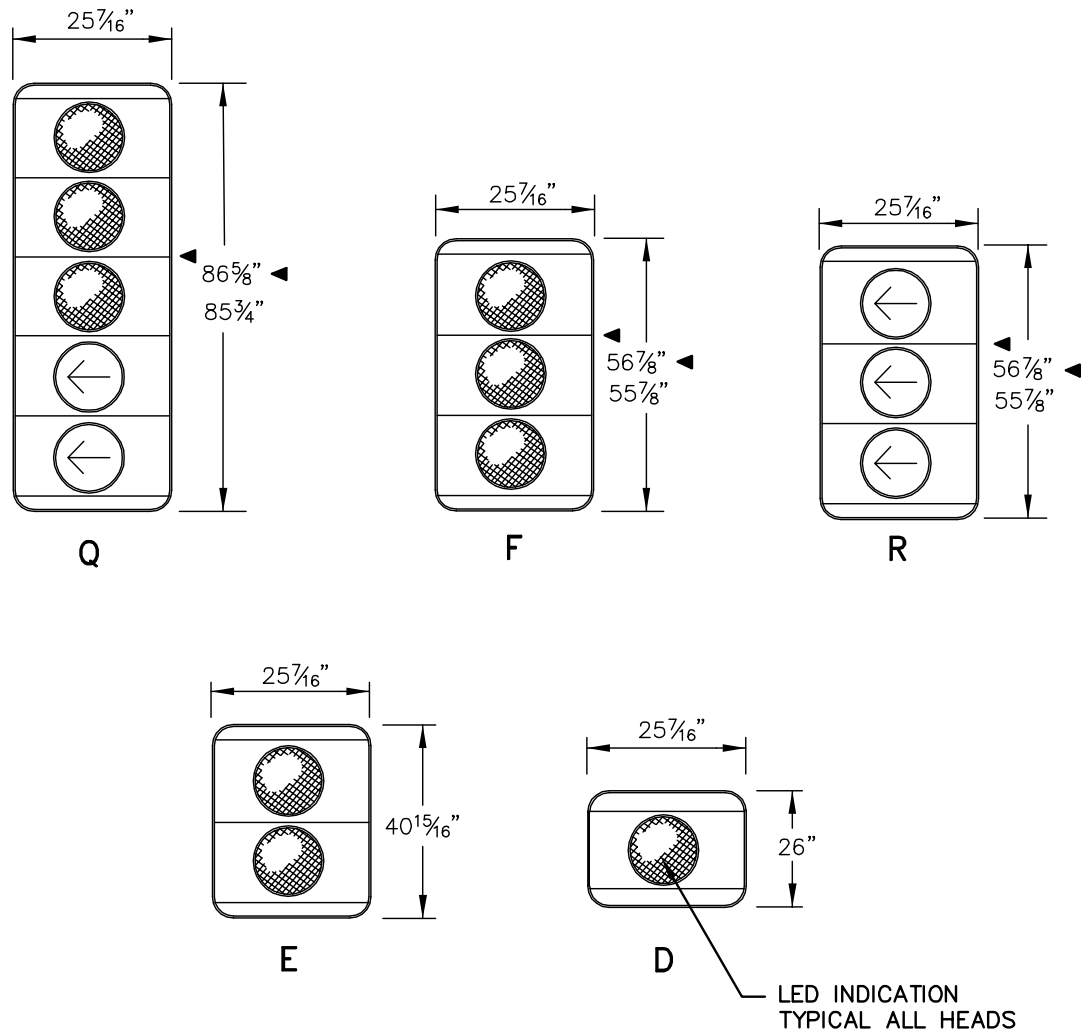


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
OVERHEAD PRESENCE DETECTION

REVISION:

6/2007

T6-4



STANDARD SIGNAL FACES

NOTES:

1. ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE LATEST CITY SPECIFICATIONS.
2. ALL DIMENSIONS SHOWN ARE NOMINAL.
3. BACKPLATES SHALL BE CONTINUOUS WITH NO OPEN GAPS.
4. ALL SIGNAL SECTIONS AND BACKPLATES SHALL BE FLAT BLACK ENAMEL.
5. ALL SIGNAL HEADS SHALL HAVE LED INDICATIONS.

◀INDICATES LOCATION OF ELEVATOR PLUMBIZER FOR MAST ARM MOUNTS PER PLAN AND DIMENSION WHEN USED

SIGNATURES
ON FILE

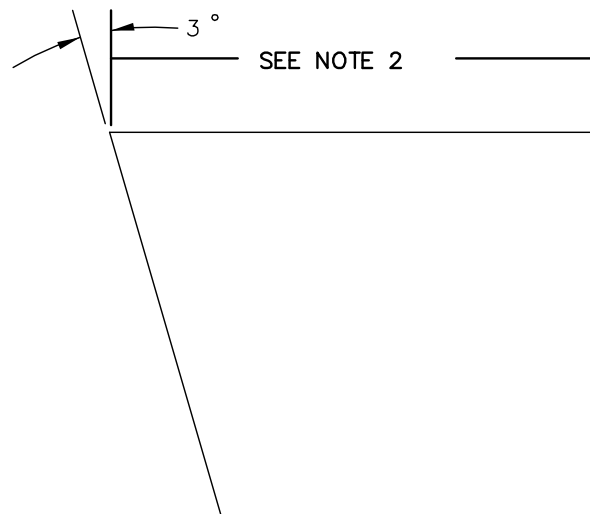
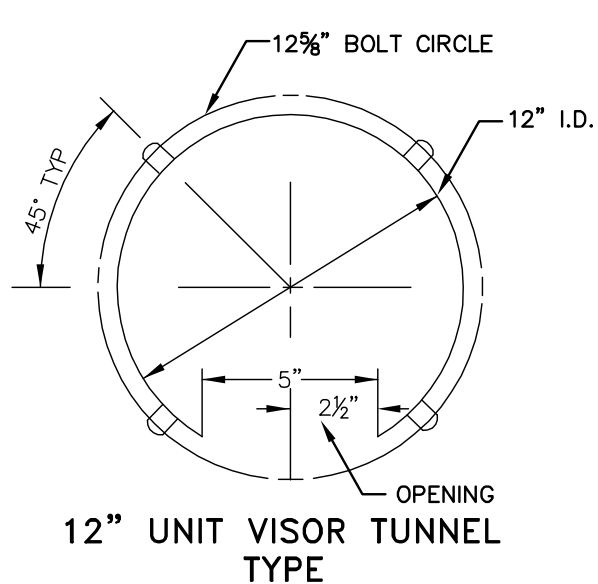


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

STANDARD SIGNAL FACES

REVISION:
6/2007

T7-1



NOTES:

1. ALL MATERIAL AND CONSTRUCTION SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF GLENDALE SPECIFICATIONS.
2. 12" LENSES SHALL HAVE 9" TO 10" VISORS.
3. THE VISOR SHALL BE ATTACHED TO THE SIGNAL HOUSING EITHER WITH TABS AS SHOWN OR WITH THE VISOR PROJECTING INSIDE THE SIGNAL HOUSING ALONG THE EDGE OF THE SIGNAL LENS.

**SIGNATURES
ON FILE**



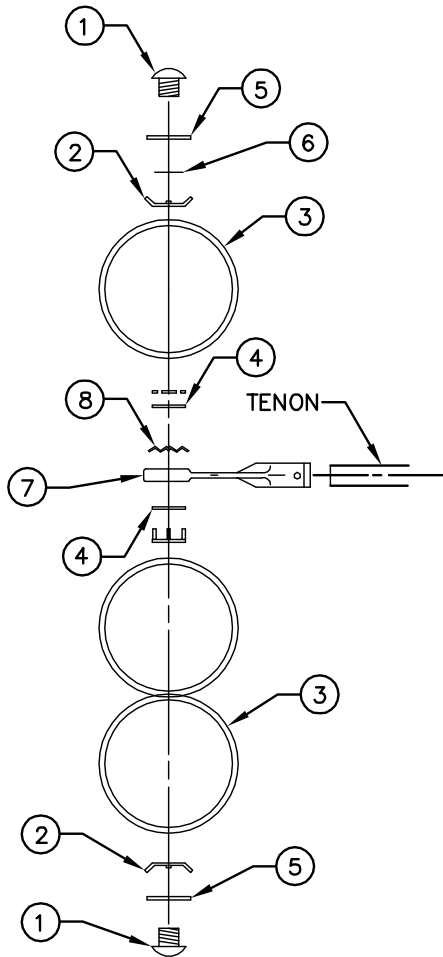
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

VISORS FOR 12" SIGNALS

REVISION:

6/2007

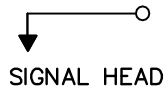
T7-2



TYPE II MOUNT

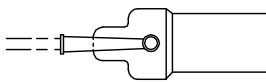
TYPE II MOUNT

LIST OF MATERIALS		
ITEM	QTY	DESCRIPTION
1	2	ORNAMENTAL CAP SEE T9-3
2	2	CONDUIT LOCKNUT
3	1	SIGNAL HEAD, SEE PLANS POLE LAYOUT
4	2	ATTACHING WASHERS W/ $3-\frac{1}{4}$ -20 UNC $\times 3\frac{1}{2}$ " CARRIAGE BOLTS AND NUTS
5	1	FLAT WASHER
6	1	NEOPRENE WASHER
7	1	ELEVATOR PLUMBIZER SEE T9-4
8	1	LOCK WASHER



SIGNAL HEAD

PLAN SYMBOL



MOUNTING ORIENTATION PLAN

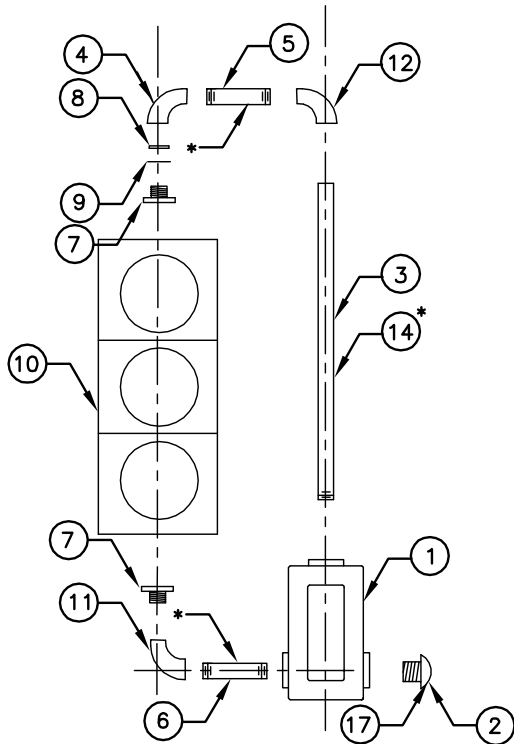
SIGNATURES
ON FILECITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

TYPE II MOUNTING ASSEMBLY

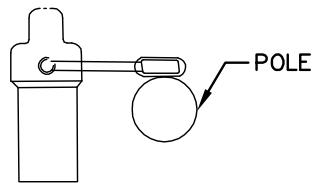
REVISION:
6/2007

T8-1

TYPE V MOUNT



TYPE V MOUNT



MOUNTING ORIENTATION PLAN

* SPECIAL NIPPLE LENGTH FOR USE ONLY WITH PED SIGNAL HEAD UNITS.

LIST OF MATERIAL

ITM	QU	DESCRIPTION
1	1	TERMINAL COMPARTMENT FOR SIDE MTG. T9-1
2	1	ORNAMENTAL CAP SEE T9-3
3	1	1½" I.D. PIPE, SEE TABLE
4	1	1½" I.D. PIPE 90 ELBOW
5	1	1½" I.D. PIPE NIPPLE, 12½" LONG
6	1	1½" I.D. PIPE NIPPLE, 12" LONG
7	1	1½" LOCK NIPPLE, SEE NOTE 1
8	1	FLAT WASHER
9	1	NEOPRENE WASHER
10	1	SIGNAL HEAD, SEE PLANS
11	1	90 ELL WITH LOCKING DEVICE SEE T9-3
12	1	1½" I.D. PIPE 90 ELBOW, DRILL & TAP FOR SETSCREW
13	2	½" X 2" GALVANIZED STEEL BOLT 13-UNC WITH FLAT WASHER AND LOCK WASHER
* 14	1	1½" PIPE NIPPLE 9½"-FOR PEDESTRIAN SIGNAL UNITS (FOR ILLUMINATED ONLY MESSAGE, USE 25¾" PIPE)

RISER LENGTH (ITEM 3)

SIGNAL FACE	F	Q
RISER LENGTH	37⅞" ^{1,2}	62½" ^{1,2}

¹ THREADS ON ONE END ONLY.

² APPROXIMATE DIMENSIONS ONLY.
CONTRACTOR TO VERIFY DEPENDING
ON DIMENSIONS OF ITEM 10.

NOTES:

1. LOCK NIPPLE LENGTH SHALL BE 1⅞" FOR 8" HEADS AND 1¾" FOR 12" HEADS.
2. FOR POLE DRILLING DETAIL SEE T5-7.



SIGNAL HEAD



PED HEAD

PLAN SYMBOL

SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

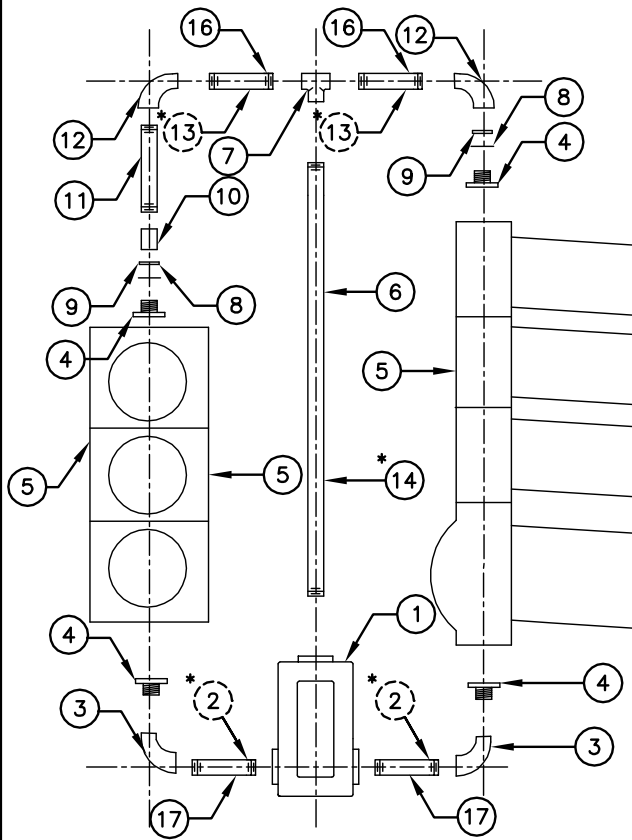
TYPE V MOUNTING ASSEMBLY

REVISION:

6/2007

T8-2

TYPE VII MOUNT



TYPE VII MOUNT

LIST OF MATERIAL

ITEM	QTY	DESCRIPTION
1	1	TERMINAL COMPARTMENT FOR SIDE MTG. T9-1
*2	2	1½" PIPE NIPPIER 11½" LONG (FOR PED SIGNAL HEAD)
3	2	90 ELBOW WITH LOCKING DEVICE T9-3
4	4	1½" LOCK NIPPLE SEE NOTE 1
5	2	SIGNAL HEAD, SEE PLANS
6	1	CENTER PIPE, SEE TABLE
7	1	TEE, DRILL & TAP FOR SETSCREW
8	2	NEOPRENE WASHER
9	2	FLAT WASHER
10	1	1½" PIPE COUPLING, AS REQUIRED
11	1	1½" PIPE NIPPLE, 24⅝"
12	2	90 ELBOW
*13	2	1½" PIPE NIPPLE, 12" LONG (FOR PED SIGNAL HEADS)
*14	1	1½" PIPE NIPPLE, 9½" LONG (FOR PED SIGNAL HEADS)
15	2	½" X 2" GALVANIZED STEEL BOLT 13 UNC WITH FLAT WASHER AND LOCK
16	2	1½" PIPE NIPPLE, 12½" LONG
17	2	1½" PIPE NIPPLE, 12" LONG

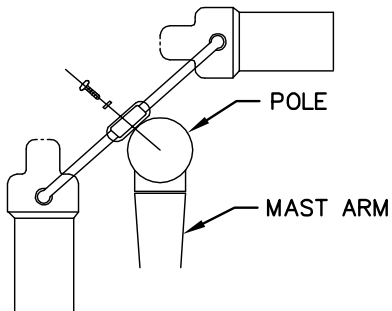
CENTER RISER LENGTH (ITEM 6)

SIGNAL FACE	F/R	Q
CENTER RISER LENGTH	37⅞" ¹	62½" ¹

¹ APPROXIMATE DIMENSIONS ONLY.
CONTRACTOR TO VERIFY DEPENDING
ON DIMENSIONS OF ITEM 5.

NOTES:

1. LOCK NIPPLE SHALL BE 1⅝" FOR 8" HEAD AND 1¾" NIPPLE FOR 12" HEAD.
2. FOR POLE DRILLING DETAIL SEE T5-7.



MOUNTING ORIENTATION PLAN



PLAN SYMBOL

* SPECIAL NIPPLE LENGTH FOR USE ONLY WITH
PED SIGNAL HEAD UNITS.

SIGNATURES
ON FILE



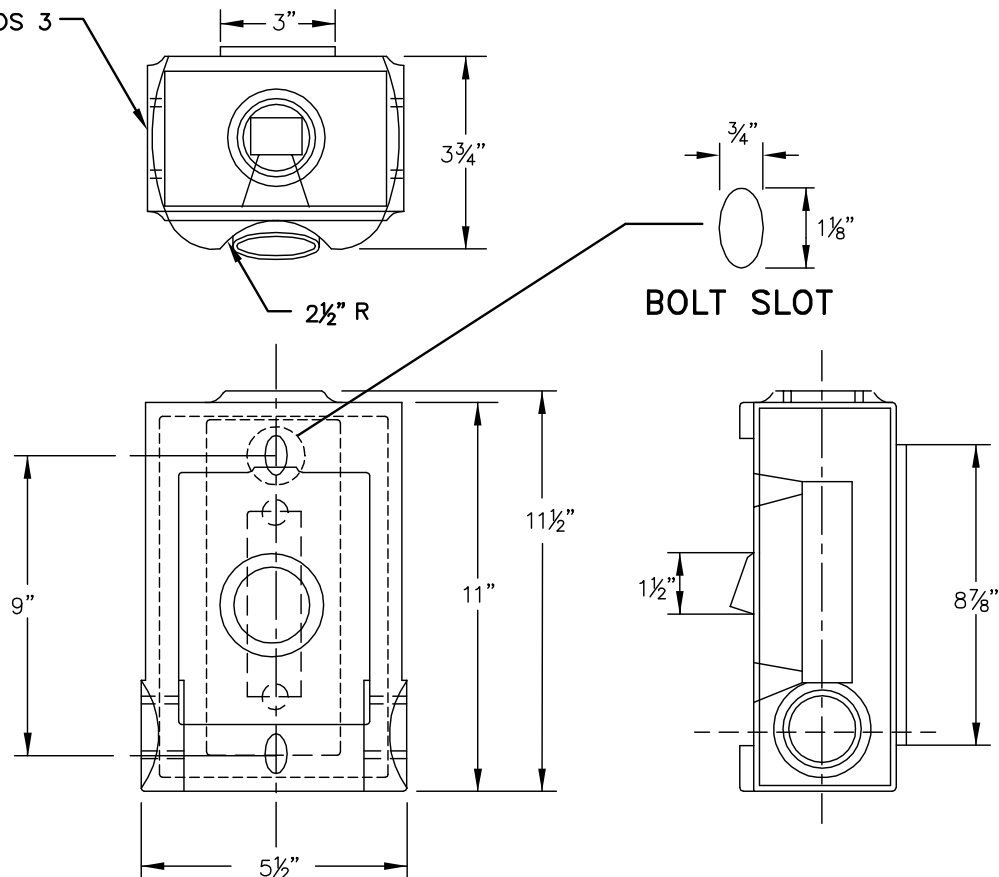
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

TYPE VII MOUNTING ASSEMBLY

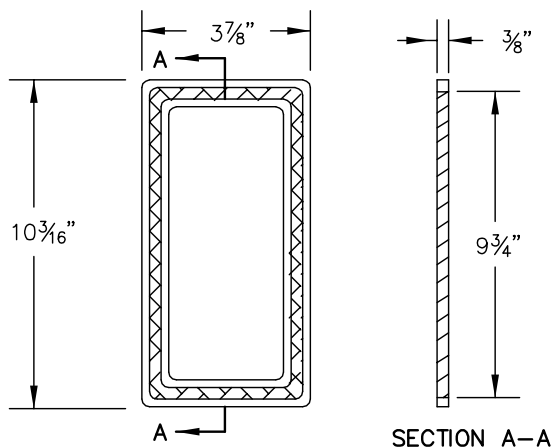
REVISION:
6/2007

T8-3

1½" PIPE THREADS 3
PLACES



**SIDE MOUNTED TERMINAL COMPARTMENT
(-1)**



COVER PLATE

NOTES:

1. COVER PLATE SHALL BE ATTACHED WITH SCREWS, 10-32 X ¾"
2. MATERIAL-HIGH STRENGTH BRONZE OR STEEL
3. PAINT FINISH TO BE FLAT BLACK ENAMEL

**SIGNATURES
ON FILE**

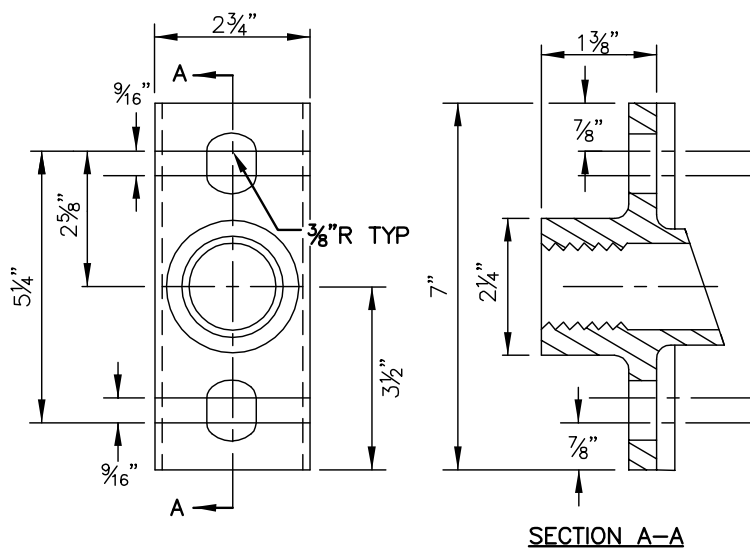
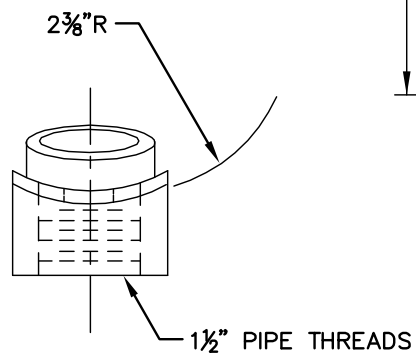
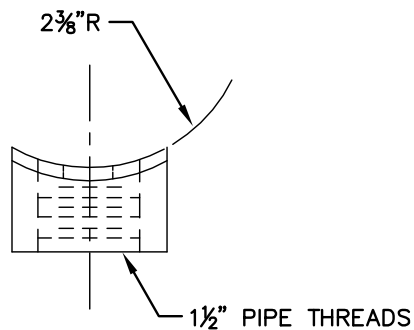


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
TERMINAL COMPARTMENT
SIDE MOUNTED

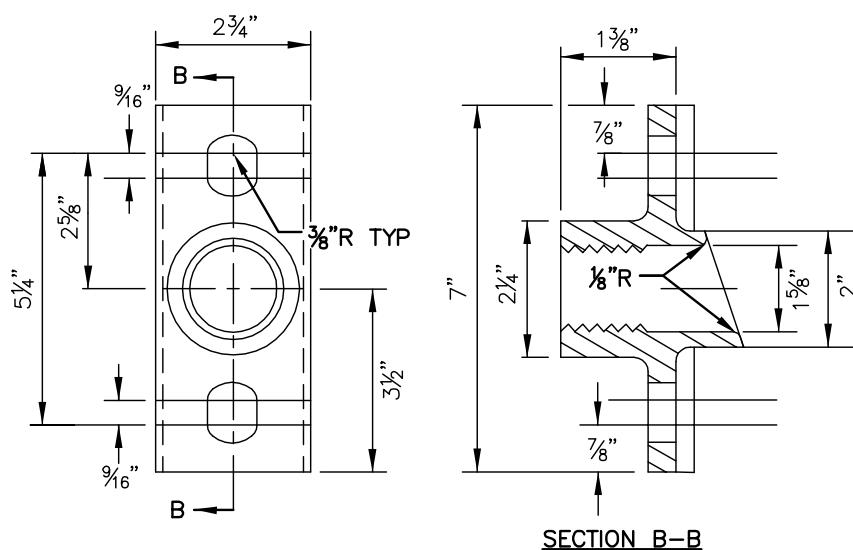
REVISION:

6/2007

T9-1



POLE PLATE (-2)



POLE PLATE WITH WIRE GUIDE (-1)

NOTES:

1. MATERIAL-HIGH STRENGTH BRONZE
2. PAINT FINISH TO BE FLAT BLACK ENAMEL

SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

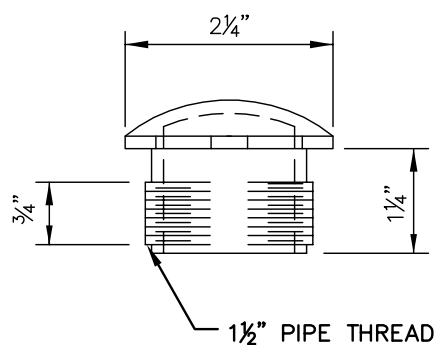
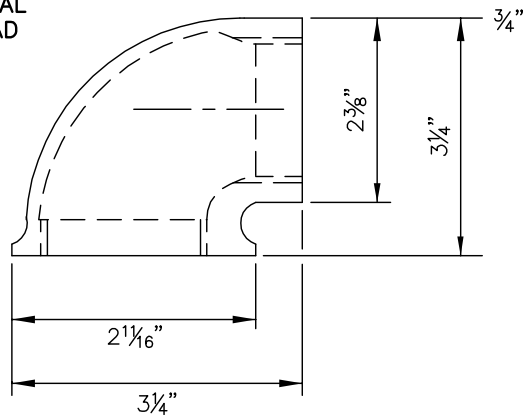
POLE PLATE DETAIL

REVISION:

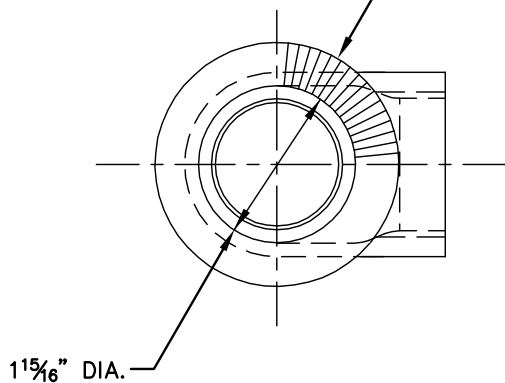
6/2007

T9-2

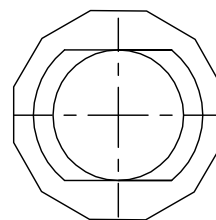
1½" INTERNAL
PIPE THREAD



72 TEETH 1/16"
HIGH ALL AROUND



-2 ELBOW WITH
LOCKING DEVICE



-6 ORNAMENTAL CAP

NOTE:

PAINT FINISH TO BE FLAT BLACK ENAMEL

**SIGNATURES
ON FILE**

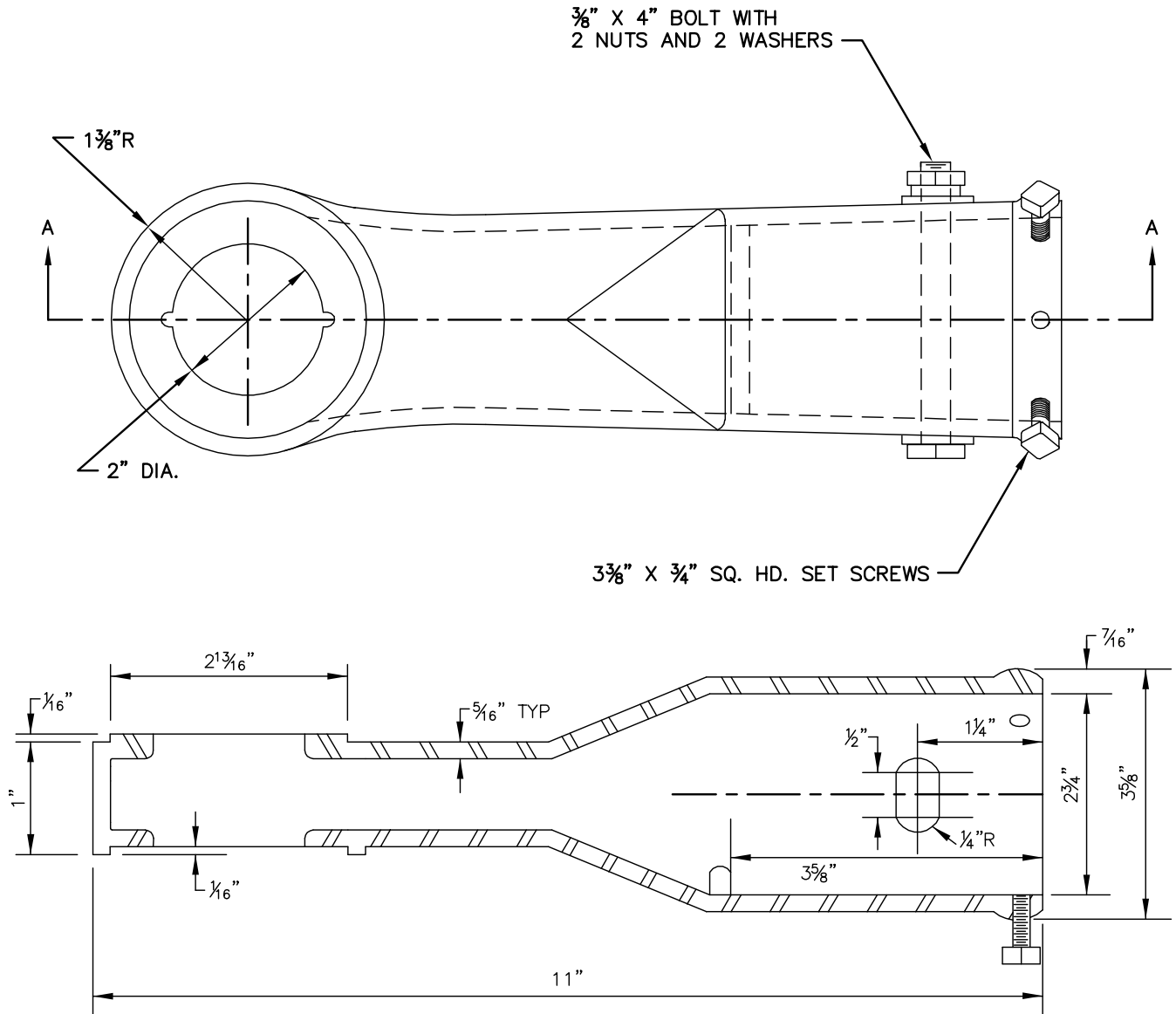


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
MISCELLANEOUS ASSEMBLY PARTS

REVISION:

6/2007

T9-3



ELEVATOR PLUMBIZER

NOTES:

1. MATERIAL-HIGH STRENGTH BRONZE
2. PAINT FINISH TO BE FLAT BLACK ENAMEL

SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

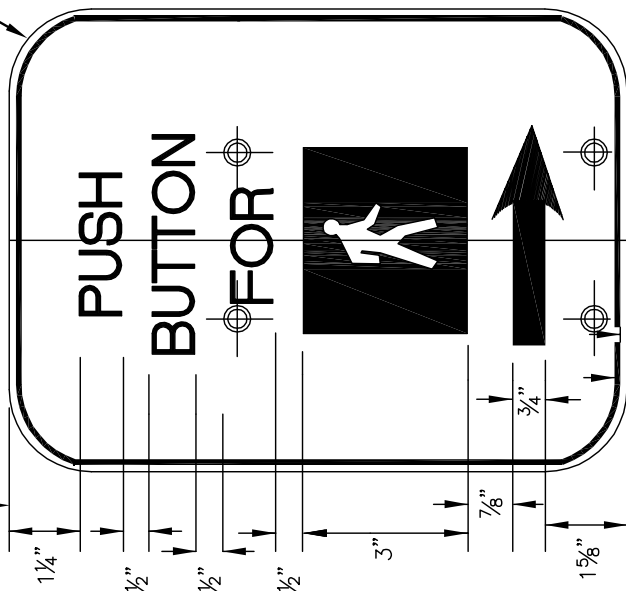
MAST ARM PLUMBIZER

REVISION:
6/2007

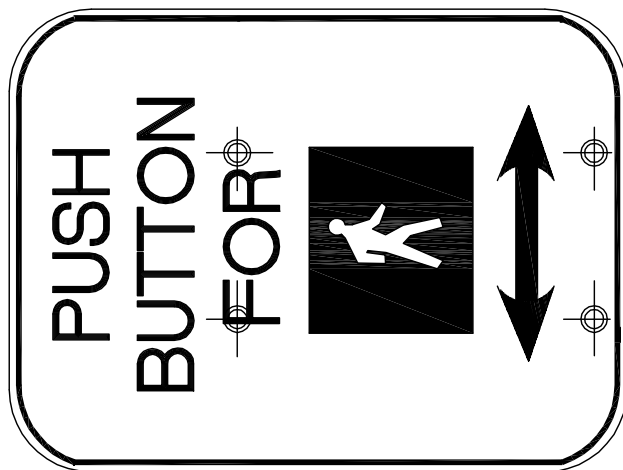
T9-4

VERTICAL SPACING TYPICAL FOR
SIGNS WITH ARROWS

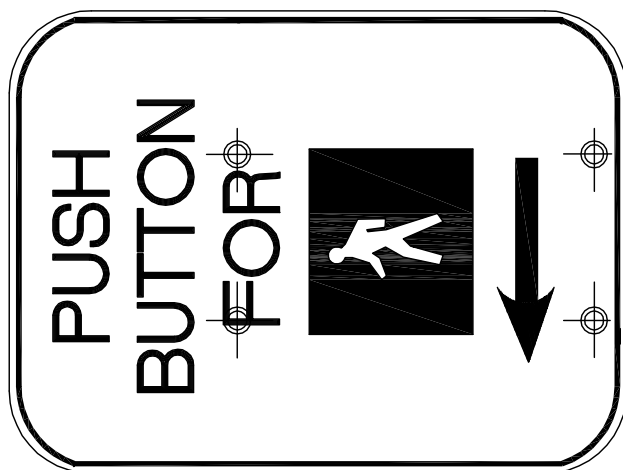
1½" R. TYP.



R10-4(R)



R10-4(B)



R10-4(L)

NOTES:

1. MATERIAL SHALL BE 20 GAUGE STEEL WITH PORCELAIN ENAMEL.
2. ALL LETTERS SHALL BE 1" SERIES "D".
3. SEE DETAIL T10-2 FOR HOLE DIAMETER AND SPACING.

SIGNATURES
ON FILE



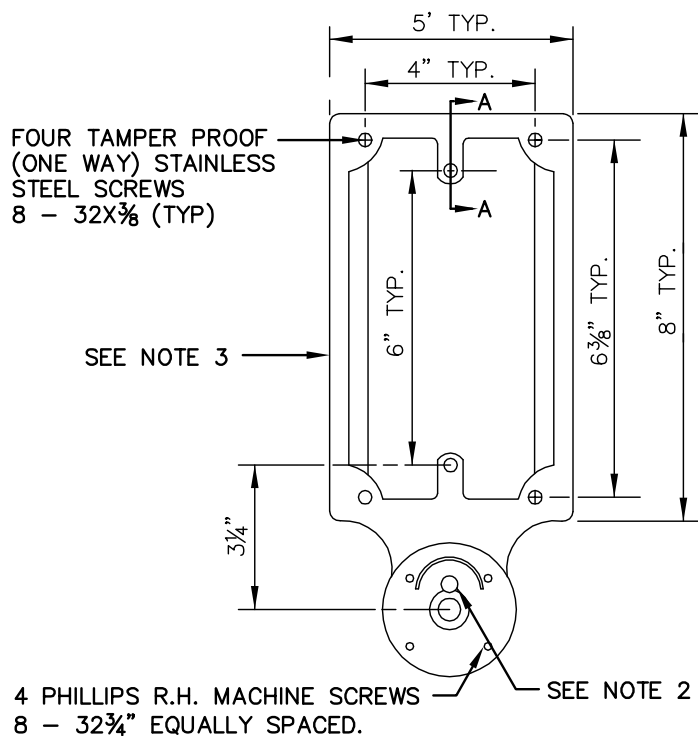
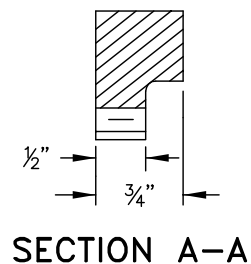
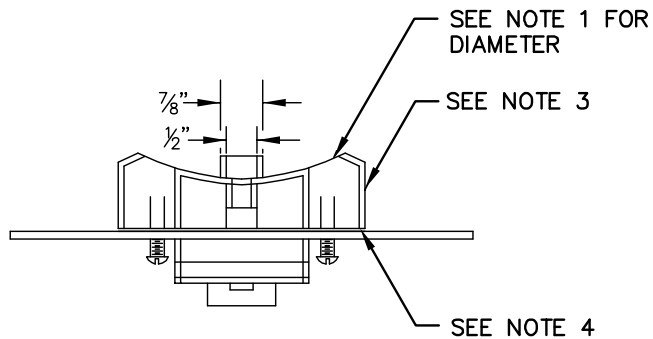
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

PEDESTRIAN PUSH BUTTON SIGN

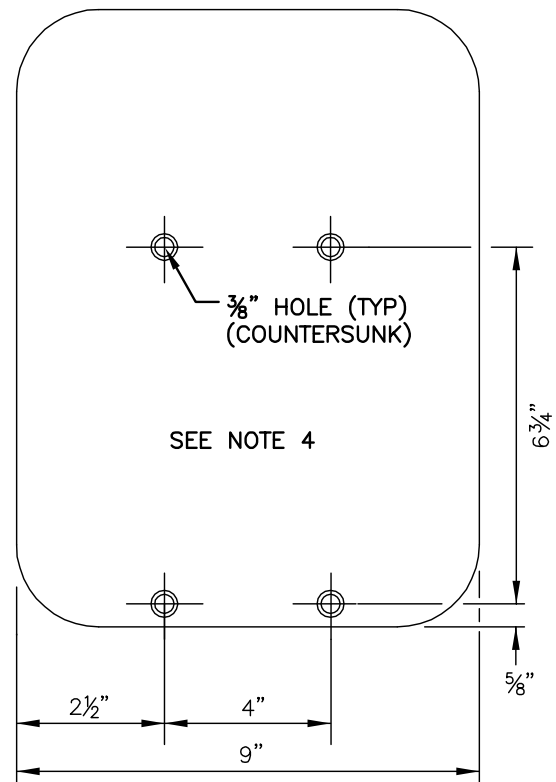
REVISION:

6/2007

T10-1



TYPE "B"



PED SIGN (T10-1)

NOTES:

1. DIAMETER OF CASTING BACK TO CORRESPOND WITH POLE DIAMETER.
2. MICRO-SWITCH PUSH BUTTON WITH NORMAL OPEN CONTACT.
3. MATERIAL SHALL BE ALUMINUM ALLOY.
4. FOR PEDESTRIAN SIGN DETAIL SEE T10-1.

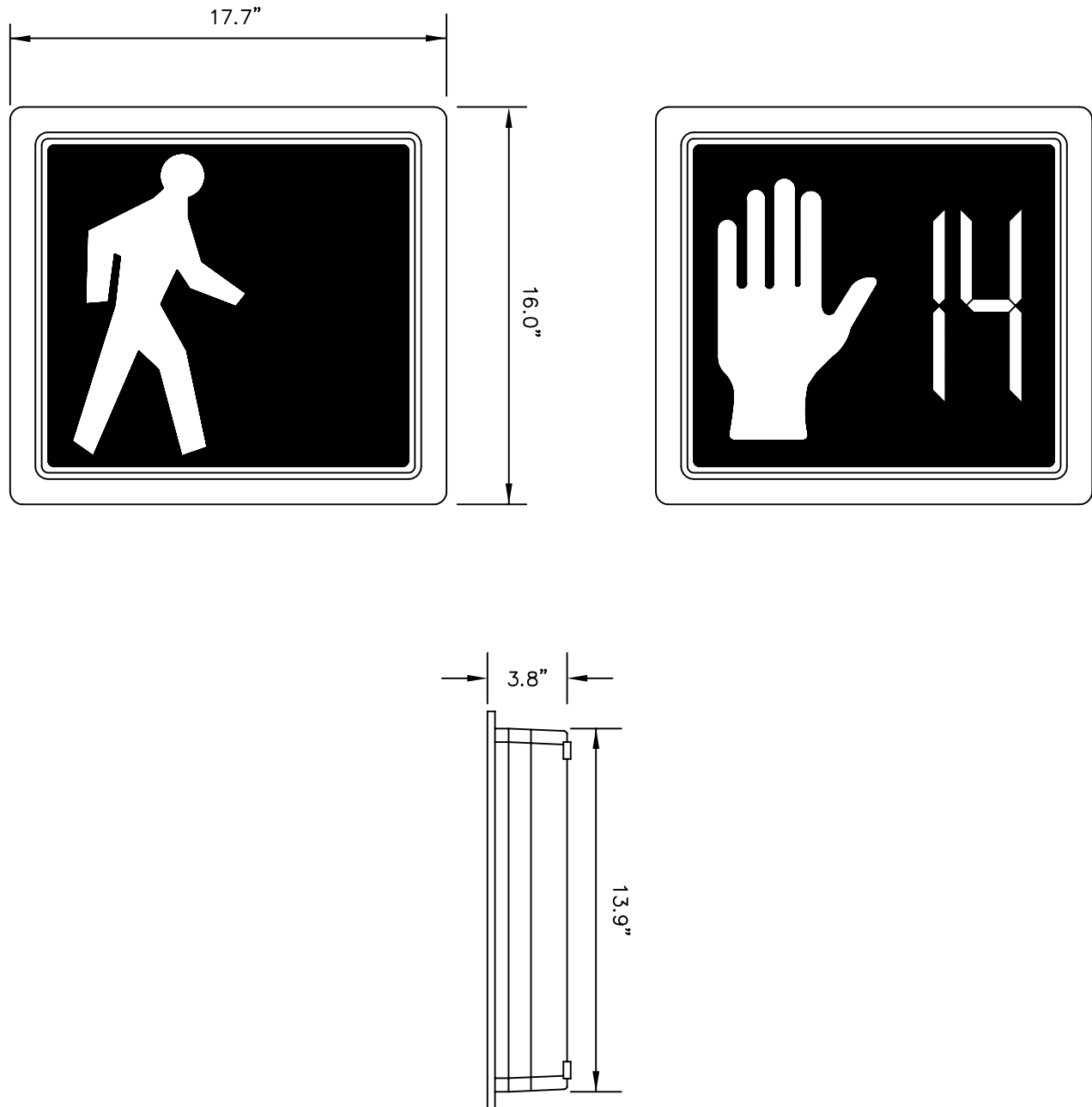
SIGNATURES
ON FILECITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

TYPE II PEDESTRIAN PUSH BUTTON

REVISION:
6/2007

T10-2

COUNTDOWN PEDESTRIAN SIGNALS



NOTES:

1. ALL PEDESTRIAN INDICATIONS SHALL BE LED TYPE.
2. NUMBERS SHALL NOT FLASH.
3. WHEN IN WALK NUMBERS SHALL NOT BE SHOWN.
4. NUMBERS SHALL DISAPPEAR AFTER COUNTDOWN REACHES 0 (ZERO).

APPROVED BY _____

DATE _____



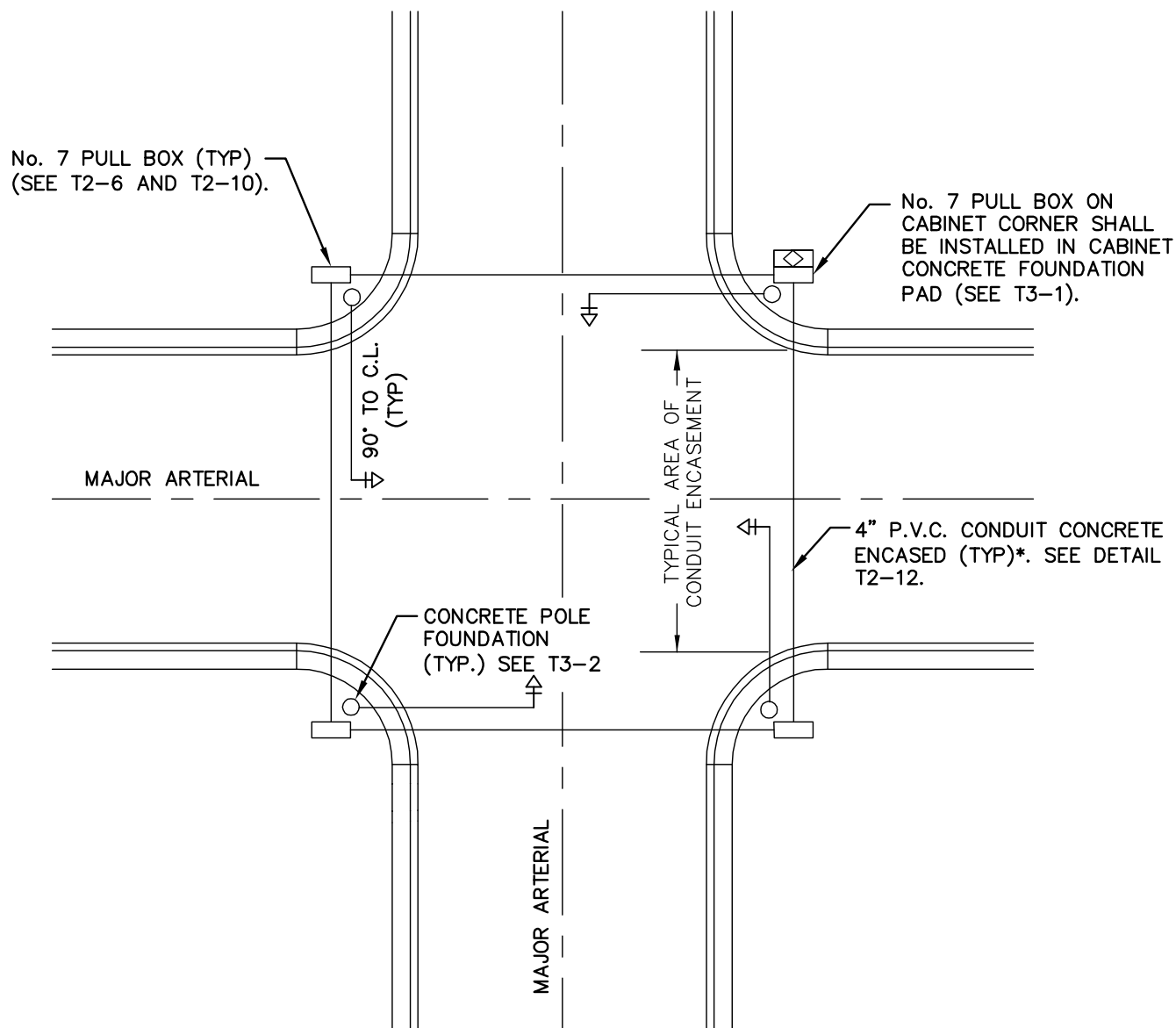
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

PEDESTRIAN INDICATION (COUNTDOWN)

REVISION:

10/2009

T10-3A

**NOTES:**

1. MULE TAPE PULL STRING TO BE INSTALLED IN ALL CONDUIT RUNS.
2. ALL CONDUITS SHALL BE GREY PVC.
3. ALL EMPTY CONDUIT ENDS SHALL BE PLUGGED WITH CONDUIT PLUGS.
4. SEE T11-2 FOR CORNER DIMENSIONS.

* IF CONDUIT IS INSTALLED BY BORING,
CONCRETE ENCASEMENT IS NOT REQUIRED.

**SIGNATURES
ON FILE**

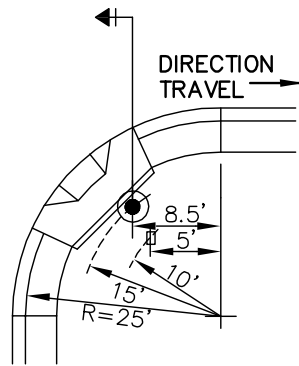


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
CONDUIT AND POLE BASE INSTALLATION
MAJOR ARTERIAL INTERSECTION

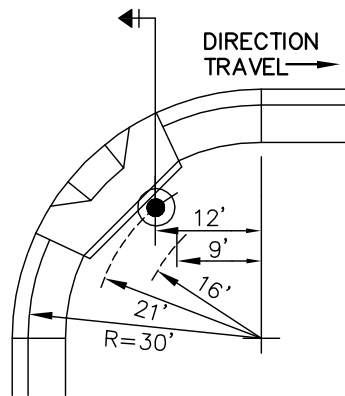
REVISION:

6/2007

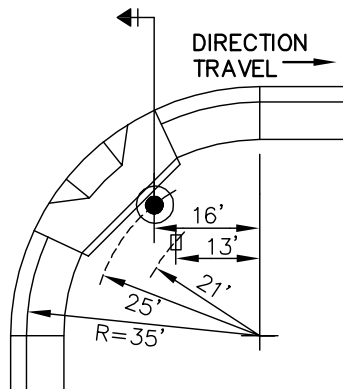
T11-1



TYPICAL CORNER (25' R)



TYPICAL CORNER (30' R)



TYPICAL CORNER (35' R)

NOTE:

1. POLE AND PULL BOX LOCATIONS SHALL BE VERIFIED BY THE TRAFFIC SIGNAL SUPERVISOR PRIOR TO INSTALLATION.

SIGNATURES
ON FILE

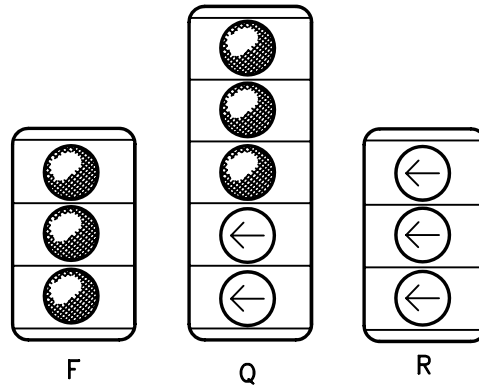


CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
CONDUIT AND POLE BASE INSTALLATION
CORNER DIMENSIONS

REVISION:
2/2008

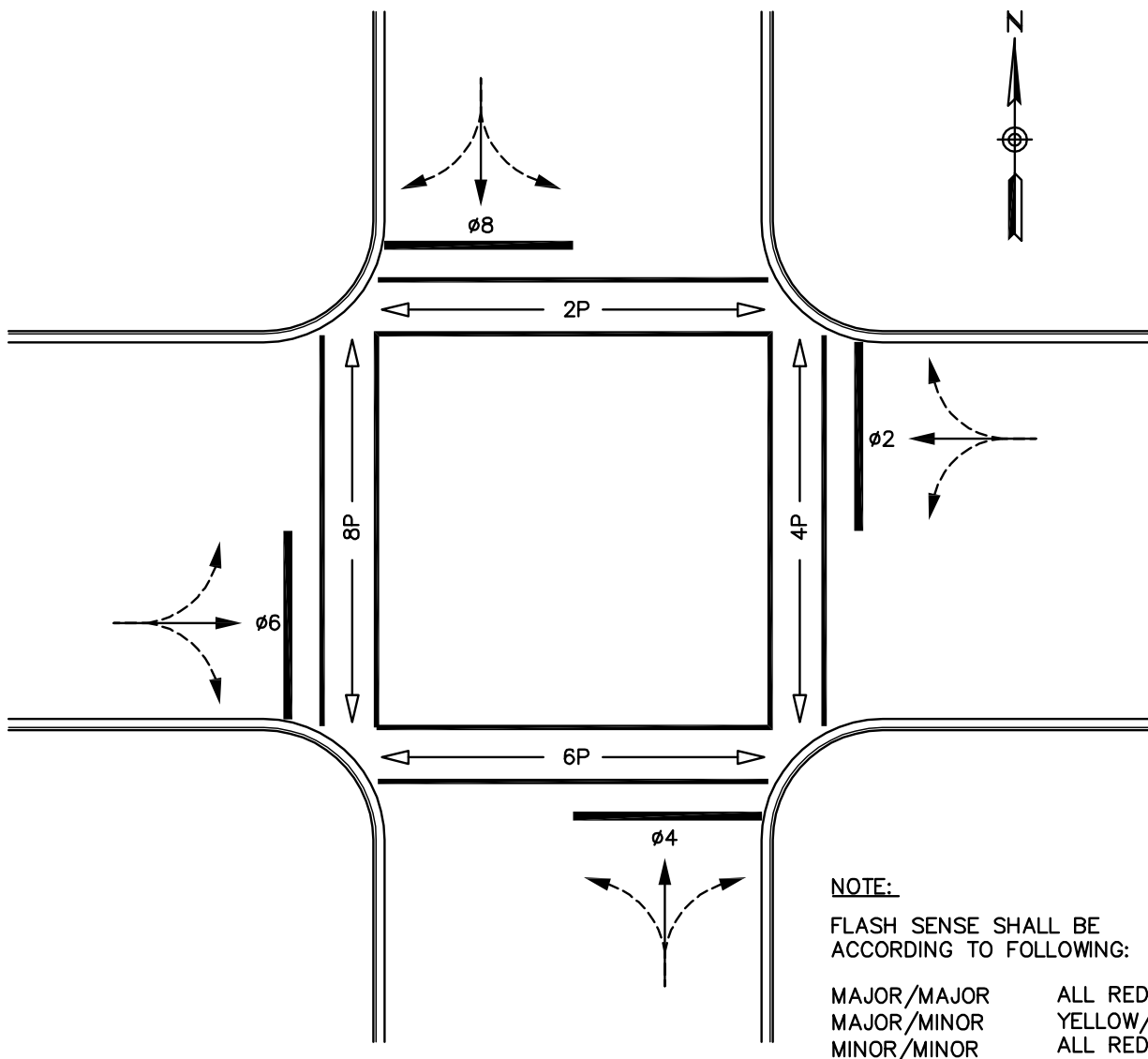
T11-2

IMSA 19-1 STRANDED 21 CONDUCTOR SIGNAL CABLE		
WIRE #	WIRE COLOR	FUNCTION
1	BLACK	N/S DON'T WALK
2	WHITE	SIGNAL AC-
3	RED	RED BALL (HIGH)
4	GREEN	GREEN BALL (HIGH)
5	ORANGE	YELLOW BALL (HIGH)
6	BLUE	N/S WALK
7	WHITE/BLACK	PEDESTRIAN AC-
8	RED/BLACK	RED ARROW (HIGH)
9	GREEN/BLACK	GREEN ARROW (HIGH)
10	ORANGE/BLACK	YELLOW ARROW (HIGH)
11	BLUE/BLACK	GREEN BALL (LOW)
12	BLACK/WHITE	E/W DON'T WALK
13	RED/WHITE	RED BALL/RED ARROW (LOW)
14	GREEN/WHITE	GREEN ARROW (LOW)
15	BLUE/WHITE	E/W WALK
16	BLACK/RED	YELLOW BALL (LOW)
17	WHITE/RED	PED PUSH BUTTON AC-
18	ORANGE/RED	YELLOW ARROW (LOW)
19	BLUE/RED	N/S PED PUSH BUTTON
20	RED/GREEN	E/W PED PUSH BUTTON
21	ORANGE/GREEN	

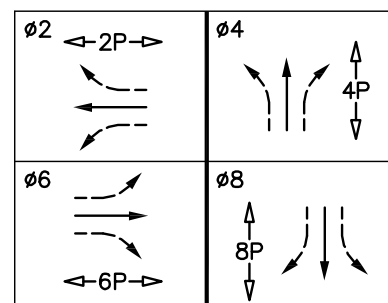


WIRING TO FIELD					
HIGH STANDARD				LOW STANDARD	
	FIVE SECTION (Q HEAD)	THREE SECTION (F HEAD)	THREE SECTION (R HEAD)	FIVE SECTION (Q HEAD) PRE-WIRED	THREE SECTION (F OR R HEAD) PRE-WIRED
RED BALL	RED	RED		RED	RED
YELLOW BALL	BLACK	BLACK		YELLOW	YELLOW
GREEN BALL	GREEN	GREEN		GREEN	GREEN
RED ARROW			RED		
YELLOW ARROW	ORANGE		BLACK	YELLOW	
GREEN ARROW	BLUE		GREEN	GREEN	
AC-	WHITE	WHITE	WHITE	WHITE	WHITE

FROM CABINET (IMSA 19-1 21 CONDUCTOR)						
	VEHICLE HEADS (STANDARD 8 PHASE)		VEHICLE HEADS (STANDARD 8 PHASE WITH PROTECTED LEFTS)		PEDESTRIAN HEADS	
	WIRE COLOR	FUNCTION	WIRE COLOR	FUNCTION	WIRE COLOR	FUNCTION
1	RED	RED BALL (HIGH)	RED	RED BALL (HIGH)	BLUE	N/S WALK
2	ORANGE	YELLOW BALL (HIGH)	ORANGE	YELLOW BALL (HIGH)	BLACK	N/S DON'T WALK
3	GREEN	GREEN BALL (HIGH)	GREEN	GREEN BALL (HIGH)		
4	ORANGE/BLACK	YELLOW ARROW (HIGH)	RED/BLACK	RED ARROW (HIGH)		
5	GREEN/BLACK	GREEN ARROW (HIGH)	ORANGE/BLACK	YELLOW ARROW (HIGH)	BLUE/WHITE	E/W WALK
6	RED/WHITE	RED BALL (LOW)	GREEN/BLACK	GREEN ARROW (HIGH)	BLACK/WHITE	E/W DON'T WALK
7	BLACK/RED	YELLOW BALL (LOW)	RED/WHITE	RED ARROW (LOW)		
8	BLUE/BLACK	GREEN BALL (LOW)	ORANGE/RED	YELLOW ARROW (LOW)		
9	ORANGE/RED	YELLOW ARROW (LOW)	GREEN/WHITE	GREEN ARROW (LOW)		
10	GREEN/WHITE	GREEN ARROW (LOW)				
11		AC-		AC-	WHITE/BLACK	AC-
12	WHITE	AC-	WHITE	AC-		

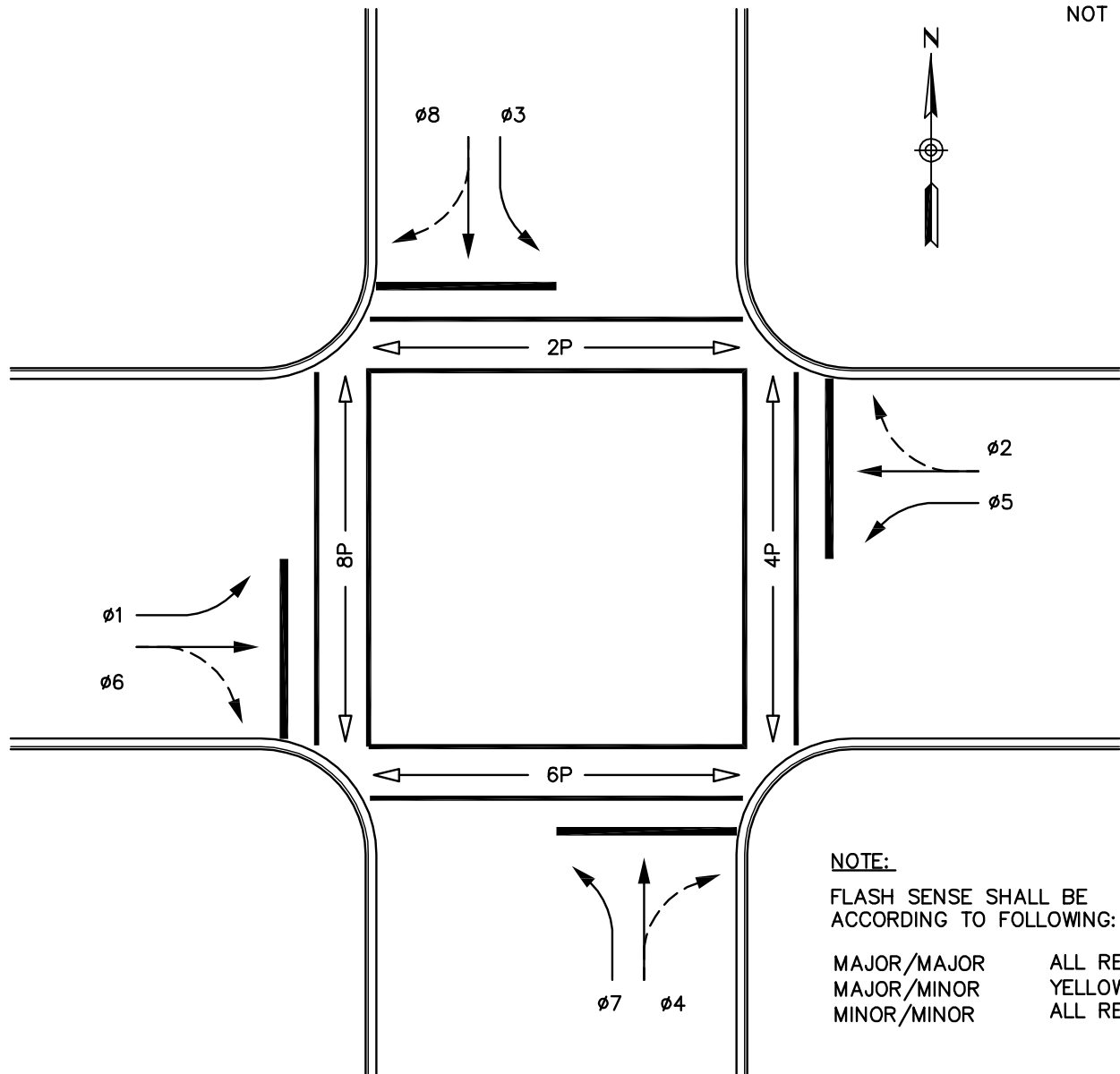
**LEGEND**

VEHICLE PHASES	▶
PEDESTRIAN PHASES	▷
PROTECTED MOVEMENT	→
PERMITTED TURN MOVEMENT	↘

PHASE SEQUENCESIGNATURES
ON FILECITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
PHASING DIAGRAM
NO LEFT TURN PHASINGREVISION:
6/2007

T12-2

NOT TO SCALE



NOTE:

FLASH SENSE SHALL BE
ACCORDING TO FOLLOWING:

MAJOR/MAJOR	ALL RED
MAJOR/MINOR	YELLOW/RED
MINOR/MINOR	ALL RED

LEGEND

VEHICLE PHASES

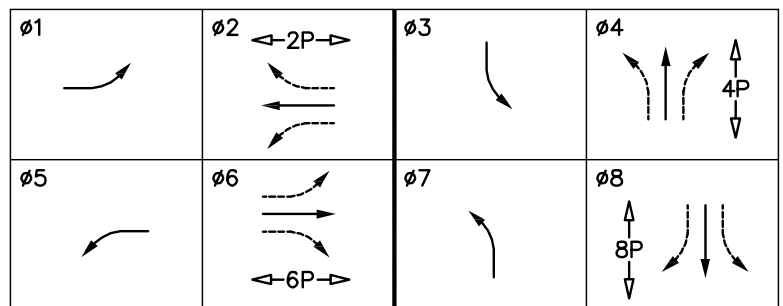
PEDESTRIAN PHASES

PROTECTED MOVEMENT

OR

PERMITTED TURN MOVEMENT

PHASE SEQUENCE



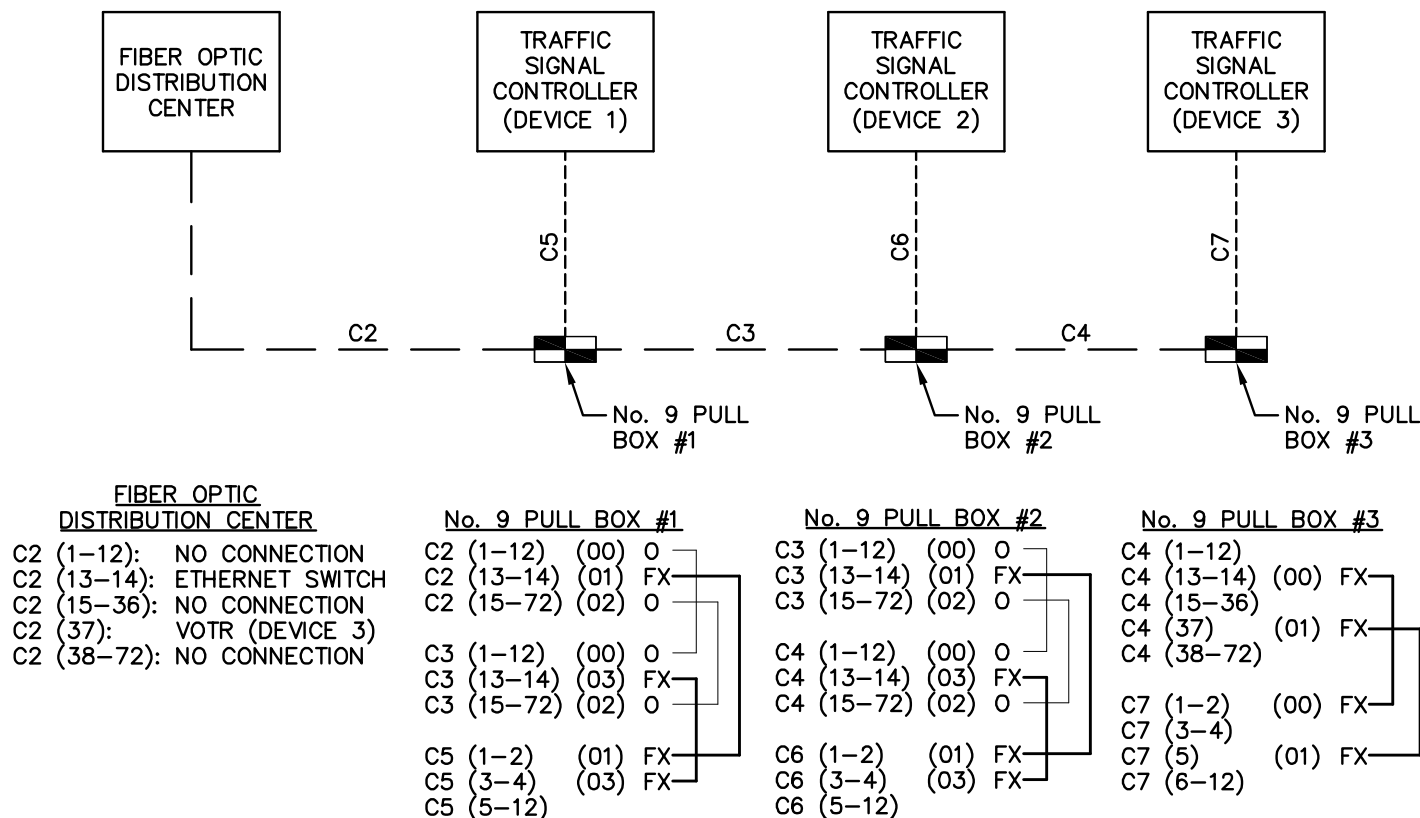
**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
PHASING DIAGRAM
WITH LEFT TURN PHASING

REVISION:
6/2007
T12-3

TYPICAL SPLICING DIAGRAM



LEGEND: CX (A-B) (NN) S

CX: SIGNIFIES CABLE NUMBER (X) AS DEPICTED IN ABOVE CABLING SCHEMATIC.

(A-B): SIGNIFIES INDIVIDUAL FIBERS IN CABLE X.

(NN): TEXTUALLY DEPICTS WHICH FIBERS CONNECT TO WHICH; (00) CONNECTS TO (00), ETC.

S: FX INDICATES FUSION SPLICE.

O INDICATES NO SPLICE, LEAVE FIBER INTACT.

———— INDICATES WHICH FIBERS ARE TO BE SPLICED TO WHICH.

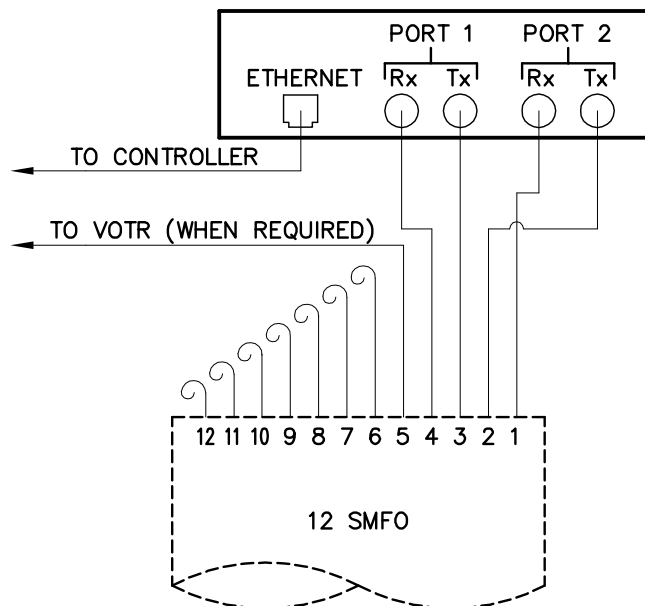
———— INDICATES WHICH FIBERS CONNECT TO WHICH, NO SPLICE REQUIRED.

———— 72 SMFO

----- 12 SMFO

NOTE:

TYPICAL SPLICING DIAGRAM AND FIBER CONNECTIVITY DETAIL ASSUME THE CONFIGURATION OF OPTICAL PORTS AS SHOWN. IF THE FIELD ETHERNET SWITCH SELECTED DIFFERS, IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO CORRECTLY CONFIGURE AND DOCUMENT THE OPTICAL CONNECTIONS.



FIELD CONNECTIVITY DETAIL

SIGNATURES
ON FILE



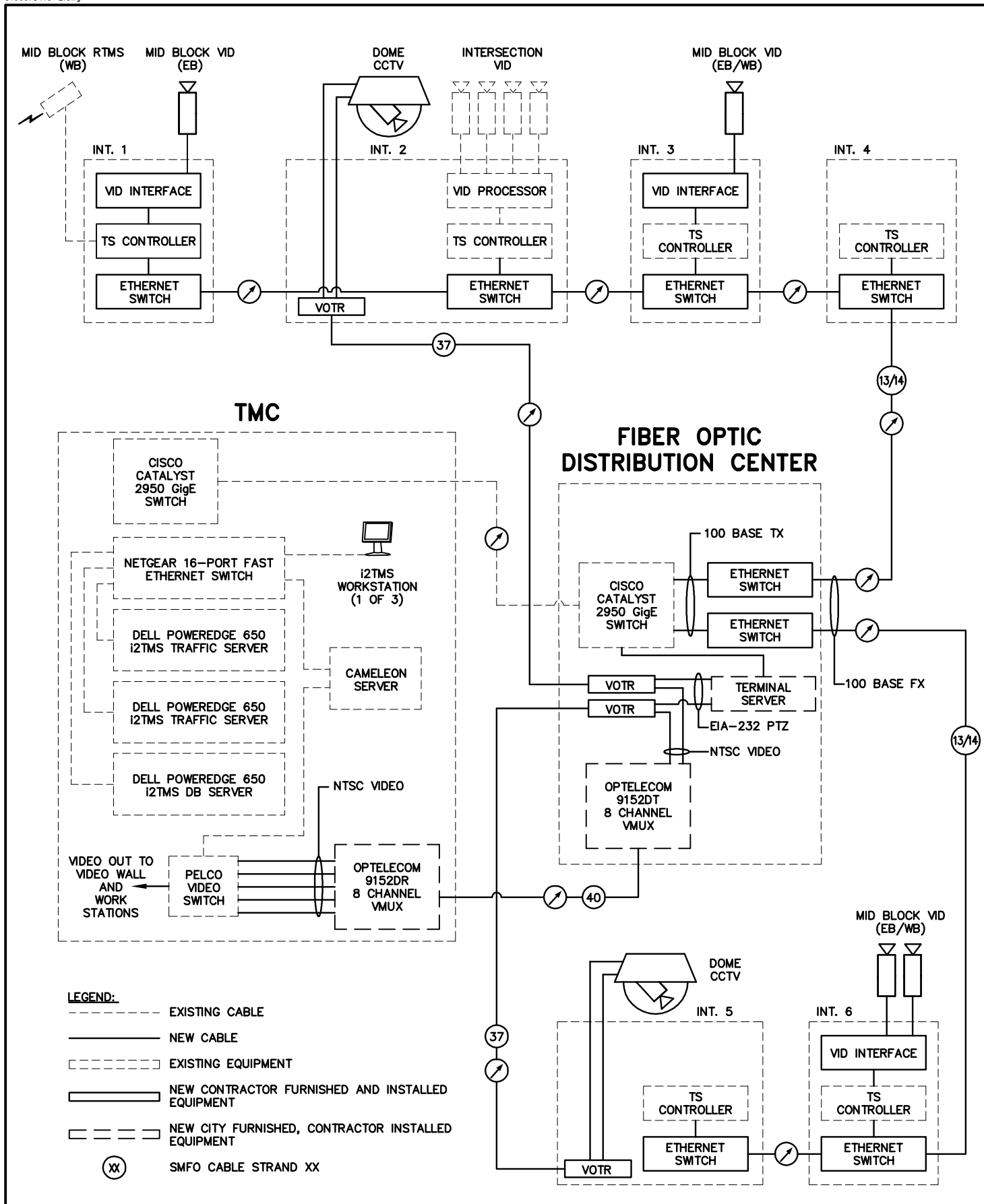
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

EXAMPLE SPLICE DIAGRAM

REVISION:

6/2007

T13-1

SIGNATURES
ON FILE

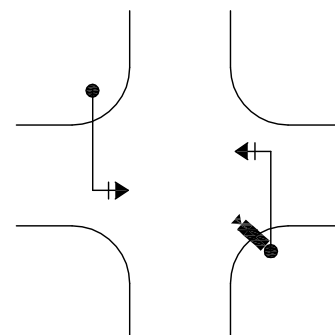
CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
EXAMPLE BLOCK SYSTEM DIAGRAM

REVISION:

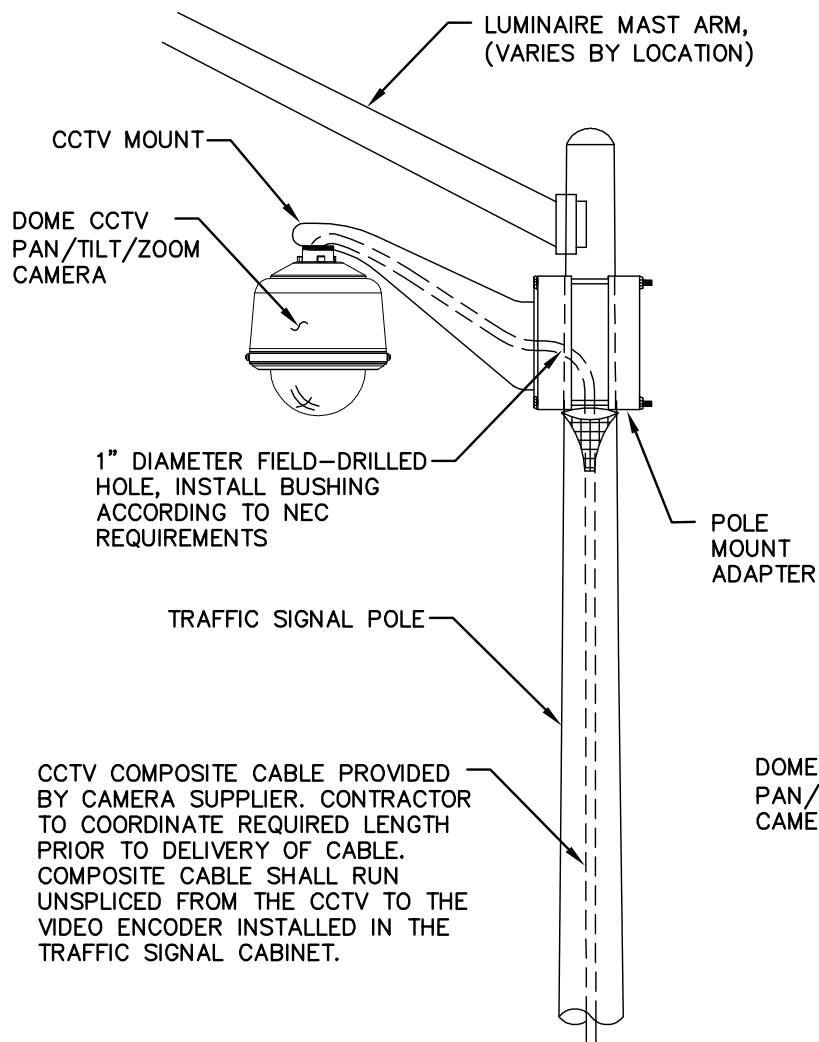
6/2007

T13-2

CCTV MOUNTING ASSEMBLY ORIENTATION



THE ROTATION OF THE CCTV MOUNT SHALL BE ALIGNED TO POINT AT THE TRAFFIC SIGNAL POLE ON THE DIAGONALLY OPPOSITE CORNER.

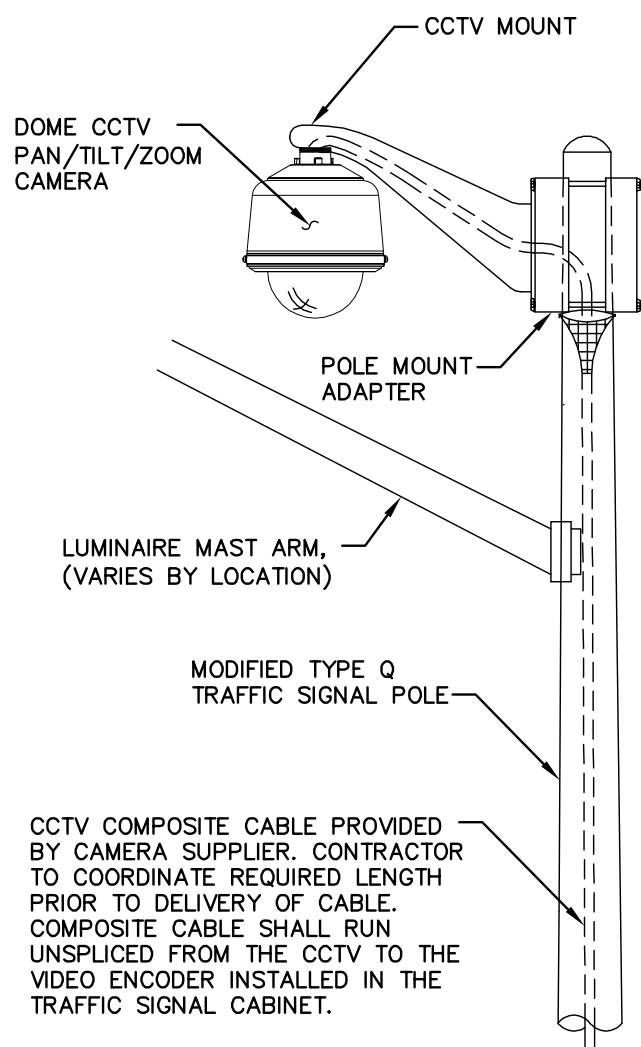


TYPICAL TRAFFIC SIGNAL POLE

CCTV COMPOSITE CABLE PROVIDED BY CAMERA SUPPLIER. CONTRACTOR TO COORDINATE REQUIRED LENGTH PRIOR TO DELIVERY OF CABLE. COMPOSITE CABLE SHALL RUN UNSPLICED FROM THE CCTV TO THE VIDEO ENCODER INSTALLED IN THE TRAFFIC SIGNAL CABINET.

INSTALLATION NOTES:

1. THE CABLING SHALL BE CONTAINED INSIDE OF THE POLE. A HOLE SHALL BE DRILLED IN THE POLE FOR CABLING TO EXIT THE POLE AND FEED THROUGH THE MOUNTING ASSEMBLY. THE HOLE SHALL BE SEALED TO PREVENT ANY WATER FROM ENTERING THE POLE. CABLING WITHIN THE POLE SHALL HAVE A MEANS OF CABLE SUPPORT AT THE TOP TO PREVENT THE CABLE TENSION FROM PULLING ON THE EQUIPMENT.
2. ALL WORK TO BE PERFORMED IN THE CABINET SHALL BE COORDINATED AND SUPERVISED BY THE CITY. CONTACT TRAFFIC SIGNAL SUPERVISOR (623) 930-2762 AT LEAST TWO DAYS PRIOR TO ANY WORK.
3. CCTV CAMERA SHALL BE MOUNTED WITHIN ONE DEGREE OF LEVEL ON BOTH HORIZONTAL AXIS.



MODIFIED Q POLE

**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS

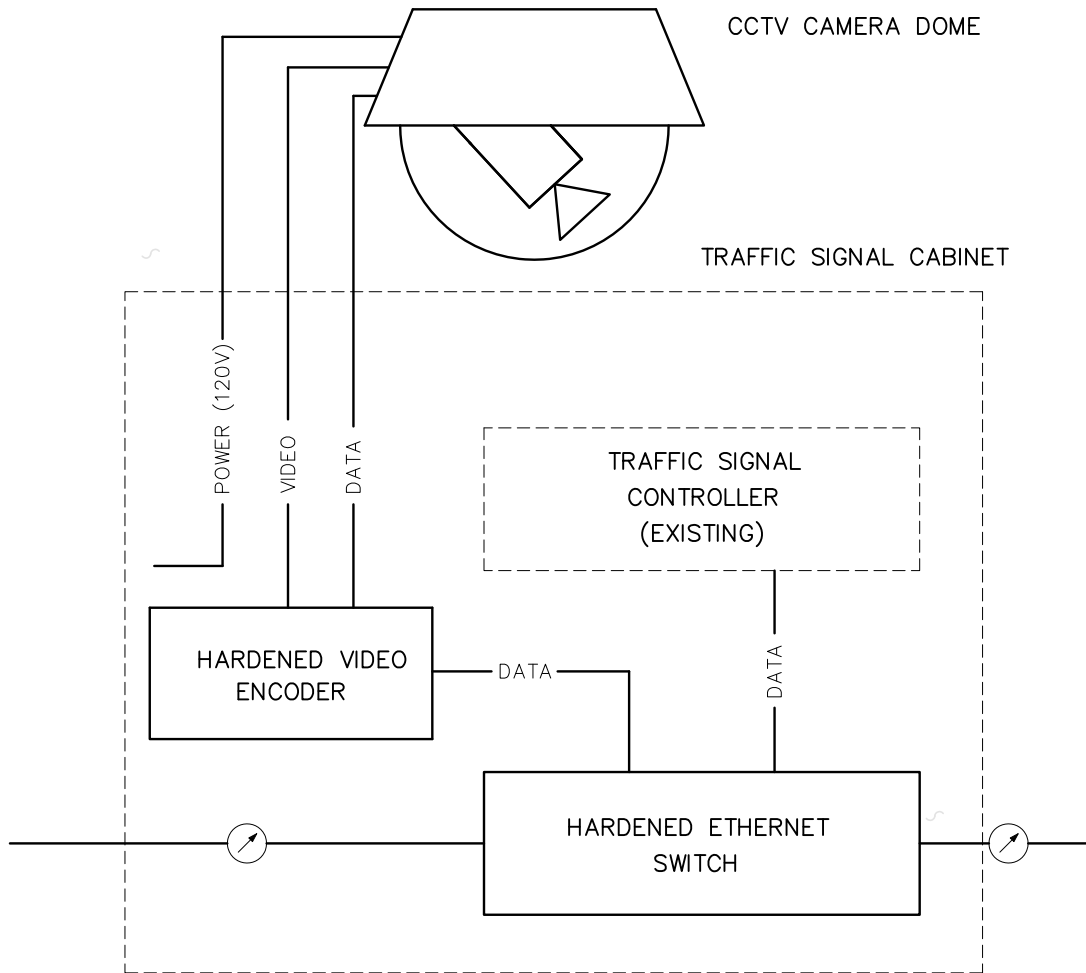
CCTV FIELD EQUIPMENT

REVISION:

6/2007

T13-3

CCTV FIELD EQUIPMENT BLOCK DIAGRAM



INSTALLATION NOTES:

1. THE CCTV ASSEMBLY SHALL OPERATE FROM 120 VAC, 60 HERTZ POWER. THE MAXIMUM POWER CONSUMPTION OF THE CCTV ASSEMBLY (CAMERA, PAN/TILT DRIVER/RECEIVER) SHALL BE NO GREATER THAN 40 WATTS. THE MAXIMUM POWER CONSUMPTION SHALL NOT EXCEED 80 WATTS WITH ALL OPTIONS FUNCTIONING (I.E., HEATER, BLOWER)
2. CONTROL AND ADDRESSING SHALL BE VIA EIA-422 SERIAL COMMUNICATIONS. THE PROTOCOL AND MESSAGE STRUCTURE FOR CAMERA CONTROL SHALL BE COMMON FOR ALL CAMERAS AND BE COMPATIBLE WITH THE COG CCTV CONTROL PROTOCOLS. NO PROPRIETARY PROTOCOL AND MESSAGE STRUCTURE SHALL BE USED.
3. NO WIRE, CABLES, OR CONDUCTORS SHALL BE EXPOSED FROM THE DOME TO THE CCTV TRAFFIC POLE. ALL CONDUCTORS SHALL BE ROUTED INSIDE THE POLE AND IN UNDERGROUND CONDUIT.

APPROVED BY _____

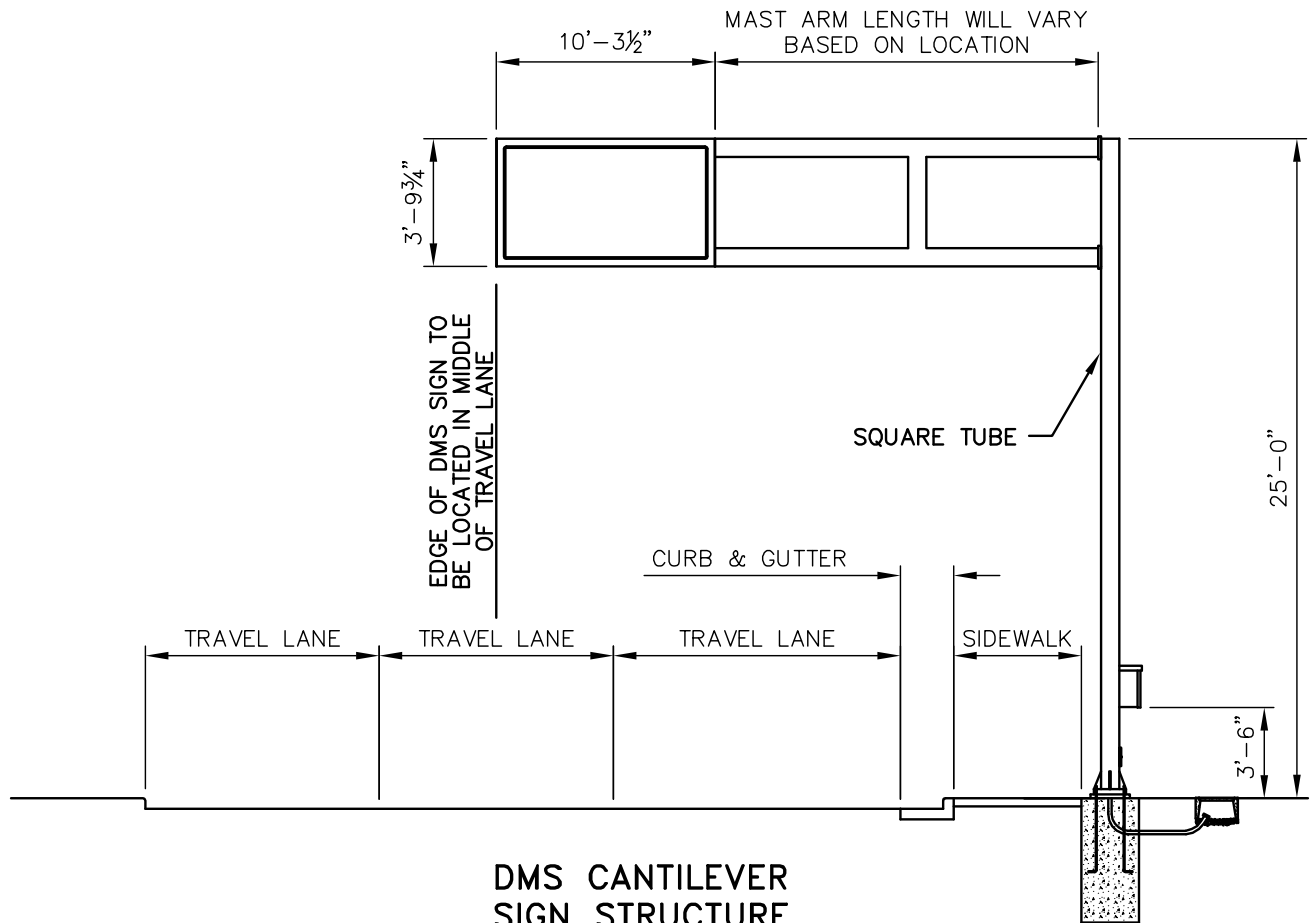
DATE _____



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
BLOCK DIAGRAM
CCTV FIELD EQUIPMENT

REVISION:
2/2010

T13-3A

**NOTES:**

1. WORKMANSHIP AND MATERIALS SHALL CONFORM TO THE MCDOT SUPPLEMENT TO THE MAG SPECIFICATIONS (JULY, 2004) AND SPECIAL PROVISIONS.
2. DMS SIGN INSTALLATION DETAILS SHALL BE PROVIDED BY MANUFACTURER. DETAILS TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION.
3. POLE MOUNTING DETAILS SHALL BE PROVIDED BY MANUFACTURER. DETAILS TO BE APPROVED BY ENGINEER PRIOR TO INSTALLATION.
4. CONTRACTOR SHALL VERIFY, IN THE FIELD, ALL DIMENSIONS, ELEVATIONS, AND DETAILS PERTAINING TO THE STRUCTURES BEFORE PROCEEDING WITH WORK.

**SIGNATURES
ON FILE**



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
DMS CANTILEVER SIGN STRUCTURE

REVISION:
6/2007
T13-4

FUTURE
STANDARD

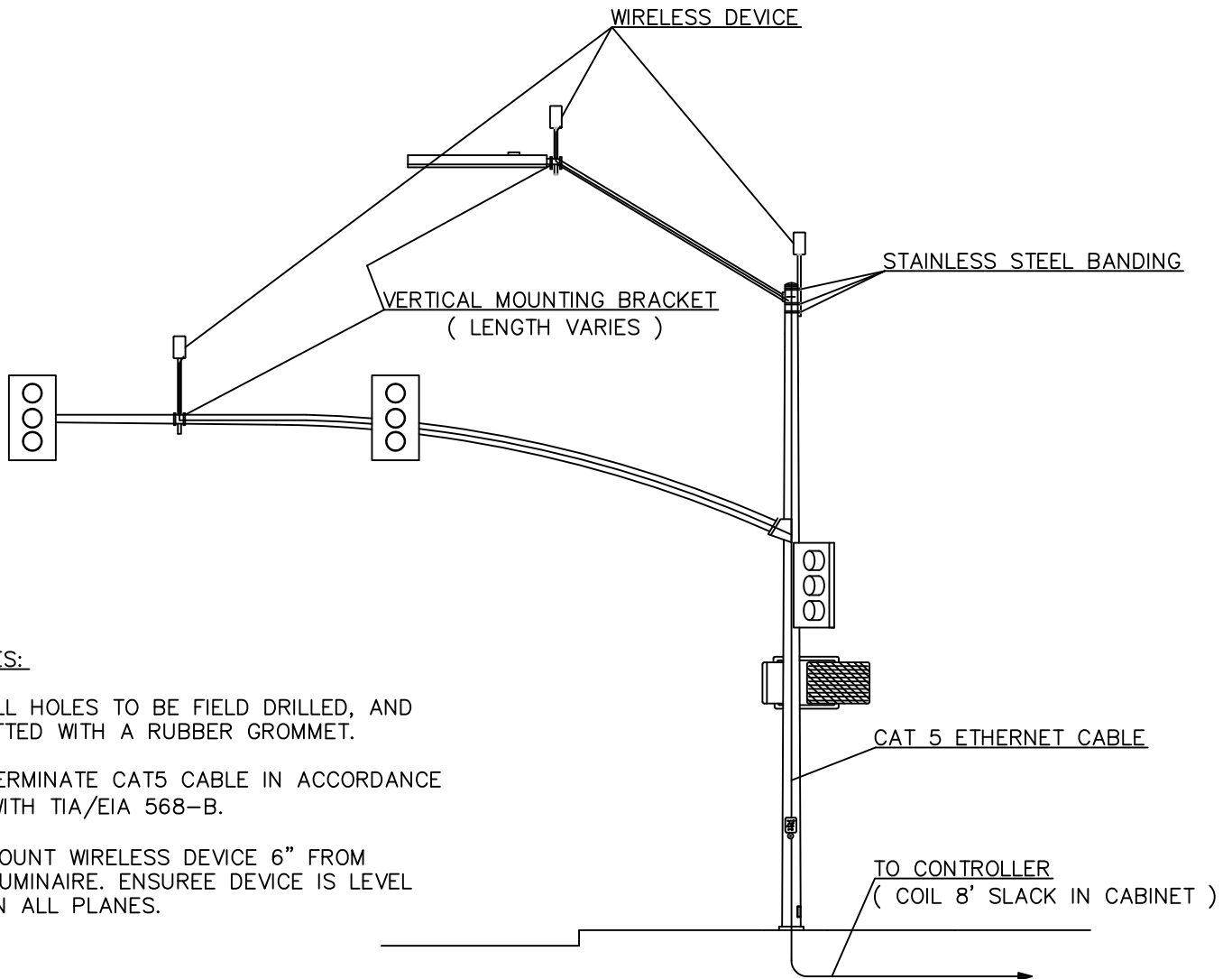
SIGNATURES
ON FILE



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
DMS SIGN BRIDGE STRUCTURE

REVISION:
6/2007
T13-5

POSSIBLE WIRELESS MOUNTING POSITIONS



NOTES:

1. ALL HOLES TO BE FIELD DRILLED, AND FITTED WITH A RUBBER GROMMET.
2. TERMINATE CAT5 CABLE IN ACCORDANCE WITH TIA/EIA 568-B.
3. MOUNT WIRELESS DEVICE 6" FROM LUMINAIRE. ENSURE DEVICE IS LEVEL IN ALL PLANES.

APPROVED BY _____

DATE _____



CITY OF GLENDALE
TRAFFIC SIGNAL AND ITS STANDARDS
WIRELESS EQUIPMENT ORIENTATION

REVISION:
12/2009

T13-6